

AMATEUR RADIO

VOL 53, No 11, NOVEMBER 1985

JOURNAL OF THE WIRELESS
INSTITUTE OF AUSTRALIA



*Special Queensland
75th Anniversary
Issue*





WELCOME



The Wireless Institute of Australia welcomes overseas dignitaries and visitors to our 75th Anniversary Celebrations. We particularly welcome:

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President of the Trinidad & Tobago Amateur Radio Society

On behalf of the members of the Wireless Institute of Australia — the World's Oldest Amateur Radio Society — I bid you welcome and hope that you all have a memorable stop-over on your journey to New Zealand.

David Wardlaw VK3ADW
Federal President
Wireless Institute of Australia



The 1st Beaumaris Sea Venturers getting in a little operating practice for JOTA, before donning life-jackets and going maritime-mobile. Pictured from left are: Christopher Goffin, Stuart Gribble, Cameron Sandell, Mavis Russell VK3BIR, and Stephen Cumming.

SPECIAL FEATURES

Bill prepares for RTTY	
by Ted Holmes VK3DEH	75
Chronology of Radio History in VK4 prior to WWII	
by Alan Shawsmith VK4SS	32
Collectors' Corner	
by Alan Shawsmith VK4SS	26
Commonwealth Contest 1985 — Results	65
Coral Coast Group	47
Electronics in the Olden Times	
by Alex Ellison VK4RU	46
Flying High with Amateur Radio	
by Mark Stephenson VK3PJ	17
Ipswich & District Radio Club	47
No Black Box	
by Aub McKibben VK4AFQ	48
Past & Future of Amateur Radio	
by Dennis Breitkreutz	45
Past, Present and the Future of Redcliffe Radio Club	52
Pre-World War Two VK4 History	
by Alan Shawsmith VK4SS	29
Profile of Thomas M B Elliott	
by Alan Shawsmith VK4SS	35
Profile of Two Members of the WIA Publications Committee	21
Radio Station on Wheels abridged from Newsrall	27
Stolen Equipment Register	71
The Long Way Round	
by Moira Milgate VK9NW	48
Village Veekey	
by Harry Atkinson VK6WZ	8
Waverley Amateur Radio Club	64

EDITORIAL

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TECHNICAL FEATURES

Aircraft Enhancement of VHF/UHF Signals by Roger Harrison VK2ZTB	9
Amplifier Noise by Lloyd Butler VK5BR	18
Antenna Tuners with Parallel Tuned Circuits by Leo Weller VK3YX	15
Feeder Tuned Antenna by Bruce Hannaford VK5XI	22
Half-wave Broadband Antenna by Malcolm Johnson VK6LC	14
Solar Electricity — how does it work? Reprinted from Radio ZS	73
Solar Powered House & Amateur Station by Kevin May YB9ARZ/VK5IV	24



AMATEUR RADIO

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QSP	13, 25, 27, 47, 49, 64, 65, 66, 68, 71 & 73
Silent Keys —	
VK6NFY, VK4WT, VK4VMI, VK2FU, VK2US, VK3CM & VK3BRF	78
Spotlight on SWLing	66
Thumbnail Sketches	50
VHF-UHF — an expanding world	56
VK2 Mini Bulletin	74
VK3 WIA Notes	74
WIA 75th Anniversary News	7
WIA News	7

REGULAR FEATURES

Advertisers' Index	80
ALARAS	70
AMSAustralia	62
AR Showcase	
Error Free Radio Data Modem	72
Guy Wire Substitutes	72
New Measuring Instruments	72
New RF Meter	72
Packet Radio Modem	72
Awards —	
Fraser Valley DX Club	67
Indonesian	67
Island DX	67
KDXA Buffalo	67
La Balsa	68
Morokullen	68
Papakura Jubilee	68
Ten metres FM	67
Club Corner	75
Contests —	
ALARAS rules	58
VK versus the World CW QRP rules	58
Editor's Comment	7
Education Notes	71
Equipment Review —	
Kenwood TH21A	59
Five-Eighth Wave	75
Forward Bias	74
Hamads	80
How's DX	60
Intruder Watch	73
Ionoospheric Predictions	79
Magazine Review	68
Obligations —	
Ralph Williamson, Harry Selman, Gilbert Pollock & Bill Holland	78
Over to you — amateurs express their opinions	76

November's issue of Amateur Radio is a special "jumbo" size edition and features much news, views and history.

VK4, this month, have a special segment containing a history of radio in that State, year by year, until WWI intervened, plus a look into many other historical events in Queensland.

Roger VK2ZTB, probes the intricacies of Aircraft Enhancement further. Roger examined the previous results, together with other information available about this phenomenon, and suggests a preliminary "model" of the propagation mechanism.

Is membership to your radio club flagging? Are you concerned at the lack of new, young amateurs coming up through the ranks? A letter from Jim VK2BOS, page 76, and an editorial from CO magazine gives an insight into some of the reasons why the youngsters may not be interested in radio and suggests that everyone must attempt to prove to them what a good hobby radio really is.

What happens to old amateurs when they move into Retirement Villages? It is a time for retirement and enjoyment of their hobby, but many are restricted as they are not allowed to erect antennas and henceforth, in many cases, no amateur radio. Harry VK6WZ, after a chance encounter with an older timer, has given this problem much thought, and suggests that special "Villages Veekey" be erected so the OTs may enjoy their hobby in peace, with no restriction. See page 8.

DEADLINE

All copy for inclusion in the January 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by midday, 11th November 1985.

of any material, without specifying a reason.

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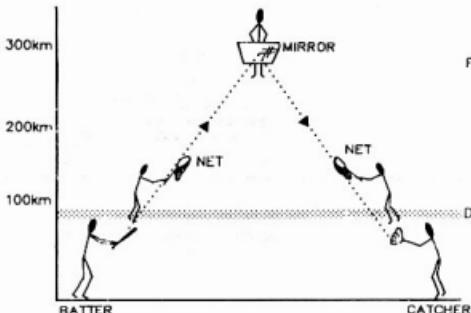
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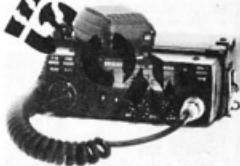
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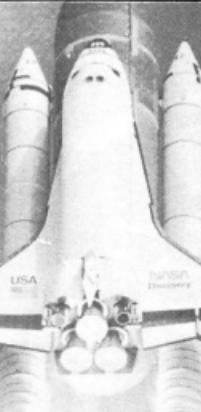
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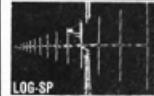
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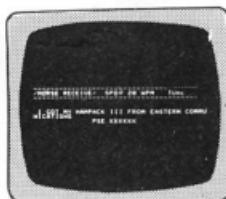
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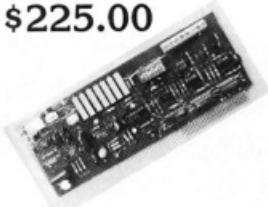
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EDITOR'S COMMENT

MORE ANNIVERSARIES

It is in the nature of us all to endow with some significance the passing of one or more whole years since some notable event. Birthdays and wedding anniversaries are always an occasion for celebration. We become even more impressed when the number of years is a multiple of five or ten. There is little doubt that our decimal counting system was originally based on our quota of fingers, so, as with the Chinese abacus, the special significance of five and ten is easily understood.

However, this year of 1985 seems to have been endowed with more than the usual number of anniversaries, significant to us as radio amateurs. All this year we have, of course been celebrating the 75th Anniversary of the WIA, and those of us in VK3 are also enjoying the 150th Anniversary of the State of Victoria. Last month, we mentioned the Girl Guides organisation, which shares, with the WIA, a 75th Anniversary, noted the 40th Anniversary of Hiroshima and Nagasaki, and the end of World War 2. We also proposed a listing of all those who have belonged to the WIA for 50 years.

But, that's not all! An organisation very closely connected with the WIA in its early days was the RAAF School of Radio, which began as the Signals School at Laverton, in 1935, and after various changes of name and location, (to Point Cook and Ballarat) came back to Laverton in 1961 under its present name, and forms now, a large and impressive part of that Air Force Base.

All those who have qualified for the WIA 50 year Honour Roll will remember the pre-war RAAF Wireless Reserve, whereby the WIA and the RAAF were jointly involved in building up a nucleus of competent amateurs, familiar with Air Force practice, many of whom went on to serve in the war. We remember some of the unlucky ones, every year, in the RD Contest (which will have its 40th Anniversary in 1988, Australia's Bicentenary year! These special years keep on coming!).

Perhaps, not totally unrelated, another 50th Anniversary also occurs this year. It was in 1935, that experiments in England proved the feasibility of detecting distant ships and aircraft, by their reflection of radio waves. In the atmosphere of increasing international tension until the war erupted in 1939, this discovery was of obvious strategic value, and a high pressure top-secret development programme led to Britain having a viable radio-location system when war broke out. With the British-invented magnetron and American mass production, radar (radio detection and ranging) became a vital factor in the eventual Allied victory. Some of our older members were involved in this developmental saga.

Now radar not only guides our missiles and spacecraft, but maps the planets, brings airline passengers routinely home through all kinds of weather, and even detects us exceeding the speed limit! Today the magnetron also cooks some of our meals; truly a plough-share, as well as a sword!

Bill Rice VK3ABP
Editor
AR



WIA Seventy Fifth Anniversary



In celebration of the 75th Anniversary of the Wireless Institute of Australia — the world's oldest amateur radio society — Mr Murray Hull of Parameters Pty Ltd, has donated one of his company's new range of Digital Multimeters to the Institute for use in a membership recruitment competition, during this Anniversary Year.

The rules are simple: any member who sponsors a new member during NOVEMBER 1985, will be entered into a draw to be held after receipt of lists from Divisional Offices, by the Federal Office. If you sponsor more than one new member, you increase your entries in the draw.

As usual, there are exceptions and Officers and Employees of the Institute, and their families are not eligible.

The 75th Anniversary Sub-Committee extends its thanks to Mr Hull of Parameters Pty Ltd, for his generous gesture.

ITU ADMINISTRATIVE COUNCIL MEETING

The IAU Administrative Council will be holding a business meeting in Melbourne on the 8th and 9th November 1985. All members of Council from around the world will be attending. This meeting is being held by the IAU's Administrative Council, to honour the 75th Anniversary of the Institute.



WIA NEWS

(WARC-ORB (1)) completes its work.

After nearly 40 days of work, the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit (GSO) and the planning of the Space Services Utilising It (WARC-ORB (1)), organised by the International Telecommunication Union completed its work on Sunday, 15th September 1985. It was opened on Thursday, 8th August at the International Conference Centre in Geneva and attended by over 900 delegates and observers from 111 countries and 14 international organisations.

BOOK PACKS, THE 75TH ANNIVERSARY AND THE YEAR OF YOUTH

The June issue on this item has generated a great deal of interest and mail to the Federal Office. In order to satisfy many of the questions being asked, listed below are the contents of each book pack. (Items may change subject to availability).

\$15 pack. P&P Paid.

Into Electronics (NSW Education Service), Novice Electronics, 100 Basic Projects, Guide to Amateur radio (RSGB), WIA Book 1, WIA Call Book, and Radio Amateurs World Atlas.

\$30 pack. P&P Paid.

The following plus the \$15 pack:

Basic Training Manual (NZART), Hints and Kinks (ARRL), and Weekend Projects (ARRL).

\$50 pack. P&P Paid.

The following plus the \$30 pack:

ARRL Handbook (ARRL), and Maidenhead Locator World Atlas.

Each pack will contain information on amateur radio in the form of letters, leaflets, and posters.

When applying for a book pack, please ensure that you enclose, in your request to the Federal Secretary, details of the Club/Group making the presentation and the recipients. It must be stressed that the value of these packs bears no resemblance to retail prices.

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BACKGROUND AND PURPOSE

This Conference was the first of its kind in history and had before it, as its principal task, to decide which space services and frequency bands should be planned and establish the technical criteria and the planning method(s) to be used. The Conference was also requested to adopt Final Acts to enable the incorporation of the decisions of the 1983 Regional Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in Region 22.

Tremendous progress in the field of space radio-communications and satellite telecommunications has taken place since the

Members of the Union first took specific steps at the Ordinary Administrative Radio Conference of 1959, to adopt new international legislation to govern the radio frequency spectrum for space activities.

These developments, together with the ever-increasing realisation of new service applications, linked with ever-decreasing unit costs, led to a series of administrative radio conferences for space radio-communications, the first of which was held in 1963.

The principle of the use, by all countries, with equal rights, of the GSO and the frequency bands allocated to the space radio-communication services was established by the Space Conference in 1971 and endorsed (Resolution No 2) by the World Administrative Radio Conference, Geneva, 1979. Furthermore, the WARC-79, in its Resolution No 3, relating to the Use of the Geostationary Satellite Orbit and to the Planning of Space Services Utilising it, resolved that a world administrative radio conference, to be held in two sessions, was to be convened to guarantee in practice, for all countries, equitable access to the GSO and the frequency bands allocated to space services using it. (For the agenda of the Conference, refer to Press Release ITU/85-12(Corr) of 7th August 1985).

During the five weeks of meetings, the Conference endeavoured to find a balanced solution that would not only permit any Member of the Union to start a satellite service on a basis of equality and consolidate continuing equal access to satellite services, but also avoid hampering the development on a sound basis of satellite technology aimed at improving spectrum use and economic viability — especially in view of the present rapid rate of technological advance in all fields of telecommunications.

The WIA, whilst not directly participating in this Conference, did give a thorough briefing to the Australian delegation on amateur involvement prior to its departure. The delegation will report to the Federal Executive any decisions taken that could effect amateur radio in space.

LICENCE FEES

The Department of Communications has notified the Institute that as from September 1985, the fee for an amateur licence will be \$23.00 per annum, an increase of \$2.00.

1985 IARU REGION III CONFERENCE

David Wardlaw VK3ADW, the Federal President and the Institute's IARU Liaison Officer, will lead a WIA Delegation to the Conference in Auckland, New Zealand, this month. Accompanying

David will be Ron Henderson VK1RH, Guy Minter VK4ZXZ, and an observer, Wally Watkins VK2DEW.

Michael Owen VK3KI, as a Director of Region III, is also travelling to New Zealand.

Host for this Conference is our Sister Society, the NZART, who will be supplying the back-up facilities.

IARU REGION III CONFERENCE 1988

As part of the proposed Bi-centenary celebrations in 1988, the Institute has proposed to the Administrative Council of the IARU, that the 1988 IARU Region III Conference be held in Australia. A decision on the venue will be made during the IARU Region III Conference 1985, being held in Auckland, this month. There will be other contenders for the Conference in 1988. At the time of writing, we know that Korea has also applied (in conjunction with the 1988 Olympic Games).

GOVERNMENT ISSUES DISCUSSION PAPER ON RADIO COMMUNICATIONS PRIVACY

Currently the Institute's officers are studying a discussion paper on the above subject, issued by the Minister for Communications, Mr M Duffy. The paper covers the Intent, Concerns, the Issues and Implications of possible new legislation to ensure privacy, by controlling unauthorised reception of radio communication signals.

The Minister, commenting on the paper, has said that some privacy control was possible under the Telecommunications (Interception) Act 1979, but this was restricted to controlling the interception of communications over the Telecom network. The Minister continued that, over the past 25 years there has been an explosive growth in the number of radio communication services in Australia. In many cases, interception of the messages is of no concern, but in others, for security or commercial reasons, confidentiality is vital to the user.

The Government is not considering legislation to prevent interception by unsophisticated devices such as scanners used by casual listeners and hobbyists. What is being considered and discussed is legislation which would support users who go to the trouble and expense of encoding their messages.

MEXICAN EARTHQUAKE DISASTER

At the time of preparing this news segment, we know that a number of first-hand reports of this disaster have been made by amateurs through the media. Australian amateurs are assisting in passing personal messages into Mexico.

AR

VILLAGE VEEKAY

Harry Atkinson VK6WZ

294 Middleton Road, Centennial Park, Albany, WA. 6330

He'd lived in the city all his life, I was a recent arrival from the country. We had worked once or twice, as it happened, but had never met until that moment.

"What do you think of that?" He held up a small plastic bag with an electronics firm's logo on the side. "Few ounces — grams they call it now — of 30 gauge enamelled. Cost \$7!" I made sympathetic noises.

His tone of disgust turned to one of triumph. "But, I'll beat 'em with this. See if I don't!"

"Who — the people in the shop?" "No!" Disgust again, this time directed at me. "Listen," he went on, "ever seen those articles in AR and QST — you know, about invisible antennas and the like?" I nodded. "Well, that's what this is for — my own invisible antenna. I'll trick them and be back on 40 and 80 again, talking to the boys. You can't keep a good amateur down!"

It happened that he was a widower and had recently sold his house and invested the proceeds in a unit at a retirement village. That was where some things got better ... and others worse.

The unit was ideal in every way. No steps to climb. No maintenance, except by paid professionals. On-site health care if needed. Everything one could ask for — well, nearly everything.

No radio masts. No beam antennas. No amateur radio. Comfortable rooms. Nice furniture. Friendly neighbours and staff. But no radio!

"What makes me so mad," he continued, "is this. All the experts say we oldies must have hobbies and/or pets, for a full and happy life. At the units there are people playing bowls, golf, mini-golf, even tennis. They are encouraged to take part in indoor and outdoor pastimes, they can even have pets. There are so many activities, but no radio!"

The bus rumbled on. I felt sorry for him. In an age when life was blooming, he was one of society's neglected men. His voice broke in on my thoughts. "Nice meeting you; keep an ear open for me on 80 one of these nights!" He waved his little bag, rose and got off.

As the bus moved on again I went back to my thoughts. Why should amateur radio be taboo in a retirement village? Retirement is the very time when OM's and YL's look forward to pursuing their hobby with even greater enjoyment than before. They have more time for every facet of the hobby.

There must be many who have had to sell their gear and give up their hobby because of the hard-and-fast, uncaring rules and regulations in institutions and retirement villages. All over Australia, numerous bodies are devoted to the improvement of conditions for the elderly, but amateur radio remains the one area which, far from being simply neglected, is actually being discouraged.

"We can't have visual pollution. I mean, aerials and all that wire hanging about the place. And of course there is all that interference with television. But, how about joining

It was a million to one chance — but it had happened. Two strangers, side by side, in a bus, suburbs bound from the city, and they discovered they shared a common interest — amateur radio.

the aerobics class? Or even tiddleywinks?"

No thanks. I'm headed for Village Vekay. The first of many, I hope. A village for amateur radio operators. Singles or couples. All "mod cons" as in an ordinary retirement village, but with one important extra. AMATEUR RADIO!

Can you visualise it? A village where amateurs co-operate on a loosely-framed roster basis. Where all the proper procedures will be followed so that television, computers and electronic musical instruments, can live happily, side by side with radio. A place where schedules can be kept without hassles.

A pipe dream, you say. Don't be negative. Radio itself was a pipe dream, once-upon-a-time.

So, who is going to build the first Village Vekay? Who is going to take the plunge? Cost? No worry, all that is needed is a sponsor for the idea. Retirement villages are largely financed by the occupants themselves — directly or indirectly. What is needed is a live, but small steering committee to make contacts with State and Federal Departments involved in community funding, to get the facts and to discuss the scheme with developers. Friendly societies, churches and lodges, those already involved in villages, would be an invaluable source of information.

How about marking the WIA 75th Anniversary by laying the foundations of this scheme? Remember ladies and gentlemen under 50 — your turn will come, one day. Won't it be nice to have a Vekay Village to turn to?

Being a long-time VHF/UHF enthusiast, with a keen interest in propagation, my curiosity was naturally aroused by Doug McArthur's article in the July 1985 issue of AR¹. In some detail, Doug describes how, during attempts at making contact via tropospheric scatter on 144MHz between his station, in Melbourne, and Gordon McDonald VK2ZAB, in Sydney, a path some 700km long, massive 'lifts' in the signal level lasting some minutes were evident at times. The same effect was observed, fortuitously, on the Melbourne-Canberra path. This led to the effect being correlated with the passage of domestic passenger aircraft more or less passing through the path mid-point between the stations.

Subsequent to the early observations, many other stations exploited the 'newly-discovered' propagation mode and a series of co-ordinated contacts threw up a great deal of data about the phenomenon. In addition, the same paths

f. Stations in Frankston (Melb) hear stations in Sydney some two to three minutes earlier than VK3UM, who is located about 40km closer to Sydney.

g. Best enhancement periods are observed when stations lie close to the line of the aircraft track.

h. Stations located up to 60km distant (possibly more), orthogonal to the aircraft track, have exploited the phenomenon.

i. 'Backscatter' propagation is noted between Canberra and Sydney stations while exploiting propagation on south-bound aircraft. This phenomenon is only noted during exceptional 'lift' conditions.

j. Lengthened enhancement periods are observed when two (or more) aircraft pass at 8-15 minute intervals.

MECHANISMS PROPOSED

Three possible mechanisms were proposed by McArthur:

i. Direct reflection from the body of the aircraft.

ii. Reflection from the condensation trails left by the aircraft flying above 30,000 feet (about 9km).

iii. Refraction caused by the air turbulence wake left by such aircraft. (Temperature heating effect or vortex turbulence).

From personal discussions with Gordon McDonald VK2ZAB, he favours i. as the explanation.

The model of the propagation mechanism I propose to explain the characteristics of the phenomena is based on iii. First, however, let me explain why I dismiss i. and ii.

I do not think reflection from the aircraft is the mechanism involved, nor does it contribute to the observed signal levels. I have argued this in another article, published in EUP recently², but let me re-cap here. There are two reasons why I believe direct aircraft reflection is not a consideration:

i. Consider Figure 1. If the aircraft is acting as a mirror, the reflection of the signal will have a 'footprint' on the ground that travels at twice the speed of the aircraft and in the same direction. The observation in f. above directly contradicts this and an aircraft reflection model does not explain this important observation of which I have first-hand experience.

ii. There are widely differing opinions, even in the engineering texts, as to how to calculate the signal levels after reflection from the aircraft. Picquenard³ gives a relatively simple 'mirror' reflection method for calculating the signal strength. Consider Figure 2. Picquenard indicates the total path loss, from A to the 'mirror' to B, is the sum of the individual path losses. This model takes the 'mirror' to be simply a radiator of the energy illuminating it.

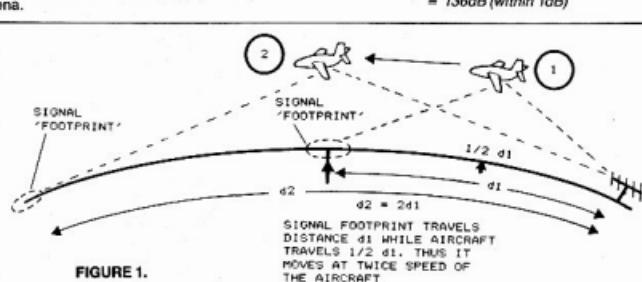
Take the VK3UM-VK2ZAB case. I calculate the distance between the stations to be about 708km. For the 'mirror' at path midpoint (0.5d), the distance between A and the 'mirror' is 354km. From ⁴, the free-space path loss for this distance is calculated from:

$$\text{Loss} = 32.4 + 20\log(d) + 20\log(f)$$

where d is distance in km
 f is frequency in MHz

On 432MHz, we get:

$$\begin{aligned}\text{Loss} &= 32.4 + 20\log(354) + 20\log(432) \\ &= 32.4 + 20(2.55) + 20(2.64) \\ &= 32.4 + 51 + 52.8 \\ &= 136 \text{dB (within 1dB)}\end{aligned}$$



initially exploited on 144MHz were successfully attempted on 432MHz, with similar results.

In summary, here are the observations reported:

a. Predominantly, the phenomenon has been exploited with south-bound aircraft.

b. Enhancement periods on the Melbourne-Sydney path, for 144MHz, are about 2-7 minutes. On 432MHz the period decreases to about half or two-thirds.

c. Signal level 'lift' observed is estimated to be 30-60dB. Subjectively, signal lift on 432MHz appears greater than on 144MHz.

d. No 'fuzz' fading of signals is observed.

e. Signal level lift and period of enhancement are dependent on upper-air wind conditions. Period and signal strength are best when upper-air conditions are 'quiet', worse when 'turbulent'. Diurnal (daily) and seasonal effects are noted (though subjective); winter providing better enhancements on average than summer, and evenings being better than day time or morning.

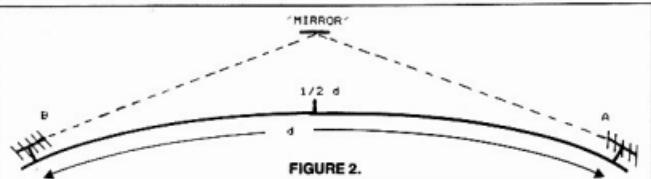


FIGURE 2.

Thus, total path loss is twice that, or 272dB. Note that the EME path loss is 262dB on 432MHz⁴, which makes the 'mirror' model 10dB worse off under these circumstances providing Picquenard's methodology applies.

Even if the 'mirror' were able to focus the signal, thus providing an improvement in signal strength by concentration of the beam reflected, this model of the mechanism cannot apply as so little power falls on the 'mirror'.

In addition, stations off-track would reflect a foot-print off-track on the opposite side of the aircraft track and the observations do not show this.

As for ii., aircraft vapour trails comprise atmospheric water vapour. Radio waves travel slower in such a medium and thus a terrestrial VHF or UHF radio wave impinging on the vapour trail would be refracted upwards, away from the ground. In addition, vapour trails are not always present where signal enhancement is experienced.

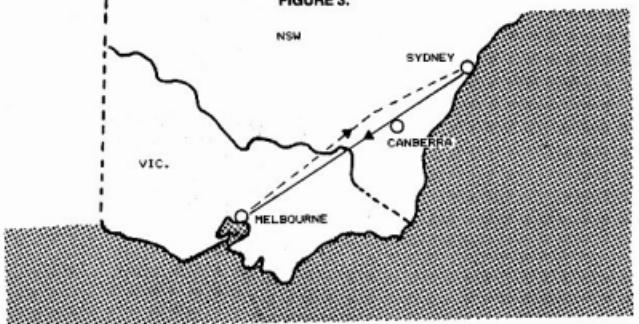
For those who might consider some form of reflection from a possible ionised trail left behind by the aircraft exhaust, let me point out that the recombination time of atmospheric ions at the aircraft altitudes involved would be extremely short. Remember, the aircraft fly well below the minimum height of the ionospheric D layer.

Now, let me set down the geometry of a variety of the paths exploited by different stations as this is important to my hypothesis and gives a more 'visual' picture of what is going on.

GEOMETRY OF PATHS

An overview of the Melbourne-Canberra-Sydney path is shown in Figure 3. The Sydney-Melbourne (south-bound) aircraft track has a bearing of about 50-51 degrees (from Melbourne), which is pretty well along the Great Circle path joining Melbourne and Sydney. Canberra lies just to the east of the track. The aircraft will take an actual flight path that may be a few kilometres east or west of this track at times, but that only contributes a minor, if at all noticeable, variation, as we shall see later.

FIGURE 3.



It is apparent from observations and chart plotting that VK3UM, at Chirnside Park, in Melbourne, is located very close to the line of the general aircraft track. How fortuitous! It seems, also, that some Sydney stations are similarly positioned. (Note, though, that aircraft descending for a landing at Melbourne airport, Tullamarine, turn off-track well to the north of VK3UM).

The vertical geometry of the situation is illustrated in Figure 5. Essentially, this is an optical model of the situation. The station at A will 'lose sight' of the aircraft when it passes point M. Likewise, the station at B will lose sight of the aircraft when it passes point L.

Using this diagram, you can fairly well estimate the time taken for an aircraft to traverse M-L and the 'seeing angles' (a and b) for given path lengths, knowing the typical aircraft cruising speeds and altitudes for the paths involved as reported in¹. The various aircraft that fly the Sydney-Melbourne route cruise at speeds that range from around 800km/hr to 910km/hr (from data supplied by the various carriers).

From¹, I worked out typical tangential distances station-to-aircraft and was able to make good estimates of the time two stations could 'see' an aircraft, as well as the other parameters. As you would expect, the parameters vary with path length, aircraft cruising speed and altitude and the altitude of the stations.

Typically, on the Sydney-Melbourne path, stations are able to 'see' the aircraft for periods of around five to seven minutes. On the Canberra-Melbourne path, stations are able to 'see' the aircraft for some 18-23 minutes (ignoring the obscuration of Black Mountain for some VK1s). We'll see how this fits into the reported enhancement periods shortly.

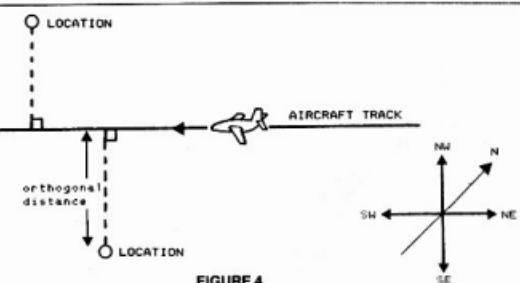


FIGURE 4.

THE SIGNAL 'FOOT-PRINT'

By timing the first appearance of a signal at two separated stations located at one path terminal^{2,3}, it is apparent the signal foot-print travels toward the aircraft at about the same speed as the aircraft flying. By timing the period of the enhancement — from acquisition of the signal to loss of signal — one gets an idea of the longitudinal width of the foot-print at a particular station location. By taking into account the orthogonal distances listed in Table 2, one gets an idea of the lateral extent of the foot-print.

From putting together more or less simultaneous observations by Melbourne stations located on-track and off-track⁴, it seems the lateral and longitudinal width varies with upper-air wind conditions. The foot-print apparently shrinks when upper-air conditions are turbulent.

Well, just how big is that foot-print and what might its shape be?

For the Sydney-Melbourne path I would judge the foot-print to be roughly elliptical, or

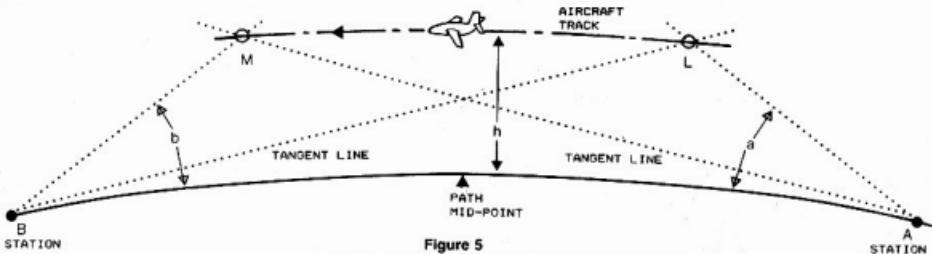


Figure 5

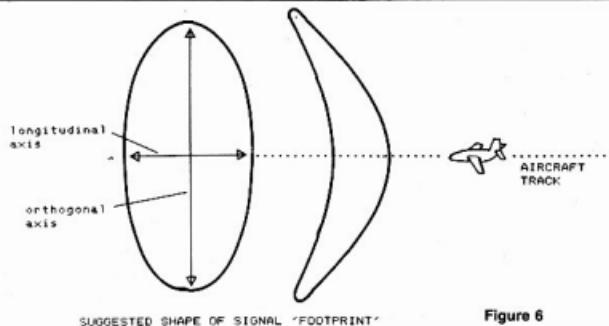


Figure 6

perhaps an ellipse 'bent' into a crescent shape (not unlike a boomerang!), see Figure 6. Under conditions of best enhancement, its longitudinal axis seems to be around 60-70km, and its orthogonal axis somewhat greater than 120km. When conditions are 'bad', it seems to shrink so that its longitudinal axis is only about 6km and its orthogonal axis about 25-30km. See Figure 7.

observations of David Tanner VK3AUU⁵. Under bad conditions, the minimum foot-print seems to be much the same as for the Sydney-Melbourne case. This isn't to say that, if a Melbourne station first works a Sydney station, followed by a Canberra station, the successive foot-prints in Melbourne will be of comparable sizes resulting in similar enhancement periods.

With such a foot-print model, stations located

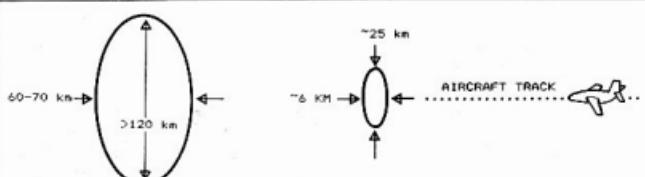


Figure 7

For the Canberra-Melbourne path, the longitudinal axis under best conditions appears to be around 150-200km, although the orthogonal axis seems to be about the same (ie a circular foot-print), judging from the

more or less on-track with the aircraft flight path will always observe longer enhancement periods, while those off-track will experience shorter enhancement periods. For stations well off-track (eg VK3AUU), conditions have to be

good if they are to make it at all. Figure 8 illustrates the typical enhancement periods reported under good conditions as the footprint passes over stations on-track and off-track.

A PROPAGATION MODEL

If the aircraft is not itself reflecting sufficient signal to account for the observed phenomena, what mechanism returns the signal to earth in the manner observed?

I think the aircraft engine exhaust — largely superheated air — is responsible. It seems very little is known about what these aircraft leave behind as they traverse their paths through the sky. From data obtained by Don Bradbury VK3VV⁶, the exhaust temperature of the jet engines fitted to the variety of aircraft flying the route is around 650 degrees Celsius or so, but this decreases rapidly to about 200 degrees C as it passes the aircraft tail (or wing-mounted engines, eg on 747s, 737s, A300s, etc) at the altitudes involved. But what happens to all that hot air?

The aircraft develops a turbulent wake; this is well known. What seems not to be well known are the parameters of the aircraft wake at altitudes of 9km and above. A recent issue of the Aviation Safety Digest⁷ gives a few clues, but is not all that helpful. The particular article detailed measurements of the 'vortex tube' created by jet aircraft, measured at quite low altitudes. Apparently, the vortex tube descends behind the aircraft at a rate of around 500 feet/minute to a distance of around 900 feet below the aircraft. This seems to relate more to what the aircraft does to the air than what the engine exhaust contributes. Draw a blank there.

What I think happens is this: although the jet engine exhaust cools rapidly at first, the cooling rate will slow down rapidly; the hot exhaust air left behind will then expand, creating a 'bubble' of air at a temperature well above that of the surrounding air (which will typically be at -30 to -40 degrees Celsius). A radio wave impinging on this hot air bubble from below will travel faster in the hot air than in the cold air and thus be refracted toward the ground. The amount of refraction depends on the rate of change of temperature from outside the bubble to inside the bubble. From Collier⁸, a rate of change of temperature with height of three degrees Celsius per 100 metres will cause a refraction at 144MHz of perhaps three to five degrees in angle, possibly more.

Now, the temperature inside the bubble need not be too much greater than the outside air temperature to provide the necessary refraction. Until we can obtain some direct data on the parameters, exactly what is happening there will remain a mystery.

Accepting that the signal is refracted by the hot bubble being dragged along behind the aircraft, why does the signal foot-print travel towards the aircraft?

Consider Figure 9. As the aircraft drags its bubble through position 1 (equivalent to L in

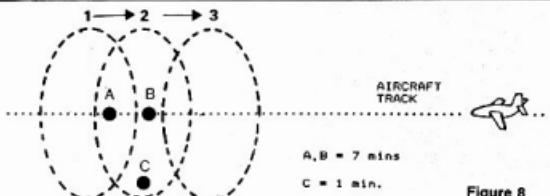


Figure 8

Figure 5), it will refract the signal as shown, and station C will commence to hear A. When the aircraft has progressed to position 2 (equivalent to M in Figure 5), station B hears A. Communications will last so long as the station at one end of the path can 'see' the bubble and also that the angle between the ground and the bubble is not so great that the bubble cannot retransmit the signal sufficiently to return it to earth.

On the Sydney-Melbourne path, the 'seeing angle' to the bubble (as in Figure 5), when the aircraft passes through position 1 (Figure 9) is typically around 1.25 to 1.5 degrees and the bubble can be seen for around 5.7 minutes, depending on the aircraft's altitude. This accords well with the observations.

On the Canberra-Melbourne path, while the bubble can be seen from both ends for around 20 minutes, the elevation angle for one end of the path eventually becomes too great for the bubble to retransmit the signal to ground. Typically, I estimate the elevation angle at loss of signal to be five or six degrees.

BUBBLE DIMENSIONS

How long is the bubble and what diameter is it? The bubble trailing behind the aircraft will eventually dissipate its energy through convection and radiation. Under turbulent upper-air conditions, it will be literally blown away.

The 'length' of the bubble, as 'seen' by the radio wave, depends on the bubble having sufficient refractivity to return the signal to ground. A rough estimate obtained by correlating subsequent Canberra-Melbourne contacts with Sydney-Melbourne contacts for VK3UM, puts the bubble length under best enhancement conditions at around 60km to perhaps 80km. The diameter is much harder to estimate.

One could possibly get an estimate of bubble diameter from the width of condensation trails. It seems entirely reasonable that the condensed water vapour would mark the lateral boundaries of the base of the bubble, but not necessarily the longitudinal extent. Water vapour, once condensed in the upper atmosphere under the right conditions, is quite stable, whereas heated air will dissipate by radiation and convection.

By estimating the angle subtended by aircraft con trails at altitudes around 10km or so, I would put the diameter of the bubble to be around a half kilometre to perhaps two kilometres within about 20km behind the aircraft. I will admit this is a bit of a fudge, but we need some starting point.

Diurnal and seasonal variation of upper-air conditions are reasonably well known and would affect the bubble accordingly. Lower air temperatures in winter would mean a greater temperature differential in the bubble, and quite possibly generally larger bubbles. This would account for the reported better conditions in winter compared to summer. A similar explanation applies to diurnal variations, in broad terms.

SIGNAL STRENGTHS

To get a reasonable numerical model to explain signal strengths is a difficult problem indeed. One of the fundamental problems here is lack of accurate measurement of the signal level 'lift' observed. The majority of reports are the usual amateur 'S-meter' (rhymes with 'guess-meter') reports. All we can really deduce is that S9 is 'quite strong' and S3 is 'quite weak'. McArthur¹ provides an estimate of the signal level variation, being some 60dB, which gives some clues. If, enhancement levels can vary this much, then the 'lift' provided should be at least that or greater, providing the reported estimate is within at least 10dB. From² I'm fairly confident of that.

If the troposcatter path loss for Sydney-

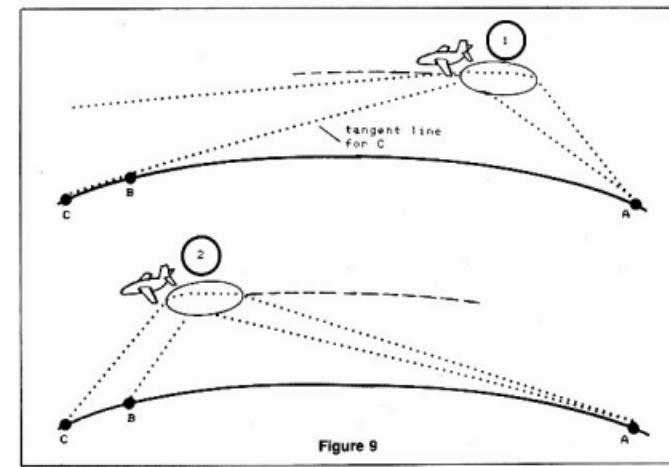


Figure 9

Melbourne is around 235dB on 144MHz³, then the aircraft is dragging a 'window' through the path, reducing the path loss to around 175dB. As suggested, stations of quite modest performance will have sufficient system gain to overcome that and achieve communications. But what about the reported back-scatter on the Sydney-Canberra path? I would say the signal travels twice through the bubble, being scattered from the ground at the far end of the path. As observed, it requires a 'good' enhancement and well-equipped stations.

From experience, ground back-scatter loss at the frequencies concerned is on the order of 30-40dB. This would subtract from the lift provided by the enhancement, but well-equipped stations can readily overcome the extra loss, as has been reported.

I hope to tackle a numerical 'guesstimate' of how the observed signal strengths are obtained in a subsequent article.

MAXIMUM PATH LENGTHS

From Figure 5, reference² and knowing the sort of altitudes the aircraft fly at, it is possible to predict maximum path lengths. For an aircraft flying at 40 000 feet (12km) or above, maximum path length is on the order of 900km for an enhancement (under 'good' conditions) of a minute or less for stations on-track at each end. If you could 'chain' flight paths and arrange the aircraft to fly through their respective path midpoints at around the same time, you could get a two-aircraft enhancement and extend the path to around 1800km.

McArthur⁴ reports observations of VK4LC which suggest just such a possibility for Brisbane-Sydney/Sydney-Melbourne flights.

SUGGESTIONS FOR EXPERIMENTS

I would suggest it is now important to obtain two sets of measurements: calibrated signal strengths and co-ordinated time observations of the foot-print parameters. In addition, the paths should be attempted on other bands, such as 50MHz and 1296MHz.

A calibrated step attenuator at the receiver front end, or in some convenient portion of the receiver chain, could be used to measure peak 'lift' values quite simply. Upon observing the maximum signal lift, simply add enough attenuation to reduce the signal to scatter levels below the noise.

Chart recorder observations of beacons or a continuously transmitting station would be

invaluable. Simultaneous chart recordings from stations at one end of a path, separated both longitudinally and orthogonally with respect to the aircraft track would also tell us much about the signal footprint.

Co-ordinated simultaneous tape recordings of one station by an array of stations at the opposite end of a path would be relatively easy to attempt using readily available equipment. Each listener would need a stereo tape recorder and an HF receiver in addition to his VHF/UHF receiver. The station at the other end of the path would be recorded on one channel of the tape, while VNG or other time standard station is recorded on the other channel. By co-ordinating on another band or channel, all recorders would be started before acquisition of signal by the furthest away station, and stopped after loss of signal by all receiving stations.

Such experiments would tell us a great deal and likely contribute much toward working out a numerical model for the propagation mechanism.

To paraphrase a common expression — the foot-print!

1 McArthur D. (VK3UM), 'Aircraft Enhancement of VHF/UHF Signals', *Amateur Radio*, July 1985, p4.

2 Harrison R. (VK2ZTB), 'Aircraft Enhancement Propagation of VHF/UHF Signals - Preliminary Observations', *SUF Vol 5*, No 1, 1985, p5.

3 McArthur D. (VK3UM), 'Radio Wave Propagation', Philips Technical Library published by Macmillan.

4 Crawford Hill VHF Club (W2NPA), 'System Considerations for the EME Path', Technical Report No 3, reproduced in *SUF Vol 4 No 1*, Autumn 1984, p26.

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6 ICAO World Aeronautical Charts, 3456 (Sydney), 3457 (Canberra) and 3470 (Melbourne); produced by the Division of National Mapping, Department of Resources and Energy, Canberra, ACT.

7 Standard Data for Radio Engineers, Fifth Edition, produced by ITT, Howard W. Sams & Co, p25-14.

8 Bradbury D. W. (VK3YV), personal communication.

9 Aviation Safety Digest, No 121, pp3-4.

10 Collier, 'Upper-Air Conditions for 2-metre DX', *QST*, Sept 1984, p20.

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TABLE 1 — Path Distance Parameters.

LOCATIONS	APPROX DISTANCE
VK2ZAB/Berowra to Frankston (eg VK3ZBJ et al)	750km
VK2ZAB/Berowra to Drouin (VK3AUJ)	720km
VK2ZAB/Berowra to Chisholm Park (VK3JM)	708km
VK3UH/Chimside Park to Sydney (eg VK2GBE et al)	678km
VK3UH/Chimside Park to Canberra (eg VK3G et al)	496km
VK3UH/Chimside Park to Admiralty (VK2DRE)	360km

TABLE 2 — Off-Track Parameters.

LOCATION	ORTHOGONAL DISTANCE/DIRECTION
Drown (VK5AUU)	62km/SE
Adaminaby (VK2ZRE)	45km/SE
Geebung	25km/NW
Frankston	22km/S

ACKNOWLEDGEMENTS

I would like to acknowledge the willing assistance of Doug McArthur VK5UM, Gordon McDonald VK2ZAB, Ian Cowan VK1BG, Don Bradbury VK3YV, Peter Ford VK3YTB and my youngest son, Corey, who obtained all the relevant physical enclosures. I would also like to acknowledge the encouragement and forward support of my wife, Val, who acquiesced to lengthy late-night STD 'phone calls and my long hours buried in texts and behind a word processor.

AR

**QSP****INTERNATIONAL TRAVEL HOST EXCHANGE**

The ARRL are maintaining a listing of amateurs throughout the world, who are prepared to entertain, and in some cases, accommodate travellers.

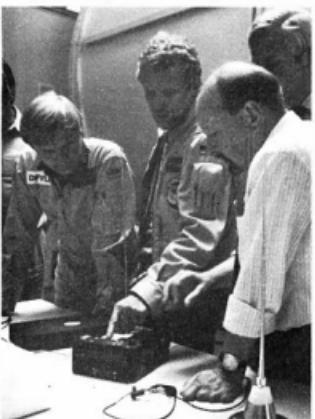
The list of countries are as follows: Australia, Austria, Canada, France, Germany, Ireland, Italy, Jamaica, Japan, Kenya, Lesotho, Liberia, Netherlands, Sierra Leone, Sweden, Switzerland, Syria, United Kingdom and USA.

Any members travelling overseas can, by writing to the address below, obtain a copy of the current listing. Also any other member who wishes to have their details included on the listing, can do so by advising the address below.

ITHE,
Federal Secretary,
Wireless Institute of Australia,
PO Box 300,
South Caulfield, Vic. 3162.

AMATEUR RADIO IN SPACELAB D1 MISSION

Last month, the Federal Republic of Germany had their first scientific manned space mission, the D1 mission. German science astronauts, Ernst Messerschmid and Reinhard Furrer hoped to carry out experiments on board the SPACELAB, transported by NASA's Space Shuttle



From left — Dr Messerschmid DG2KM, Professor Furrer DD6CF, the astronauts and Dr Ellgering DL9MH, the co-ordinator of the mission.

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COLUMBIA. Both men are licensed radio amateurs and members of the Deutscher Amateur Radio Club, (DARC).

During the seven day mission, the science astronauts operated an amateur radio station, located in the Spacelab on board Columbia. The call sign was DP0SL.

Activity was focused on Europe, but attempts were made to contact other parts of the world.

Calls of responding ground stations were recorded on tape and will, eventually, be evaluated and confirmed by special QSL card by the DARC.

The VHF/UHF transceiver used is a special development, designed and constructed by BOSCH/Germany, according to the D1 mission specifications and uses components out of the normal mobile transceiver programme of BOSCH.

RF power output of the transceiver is 10 watts, which is reduced to one watt for automatic (beacon) operation. Frequency range of the transmitter is 144 to 146MHz, modulation is FM.

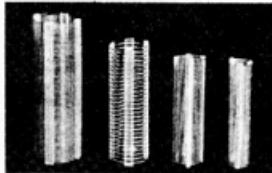
The receiver is a double super-heterodyne receiver, with a receiver frequency range of 430-440MHz. Sensitivity for S+N/N is 12dB 0.45 microvolts.

Selection of operating frequencies is provided by a ROM, programmed for four VHF transmitting frequencies and six UHF receiving frequencies within a 25kHz channel spacing. The transceiver has a built in micro-cassette recorder.

THE WAY IT WAS

The original Westlakes Novice Contest was the inspiration of Paul Linsley, then VK2NDL and now P2P9L.

The contest arrived on the scene shortly after

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1-16	1/2"	16	3"	No 3003	\$1.60	
2-08	1/4"	8	3"	No 3006	\$1.90	
2-16	1/4"	16	3"	No 3007	\$1.90	
3-08	1/4"	8	3"	No 3010	\$2.30	
3-16	1/4"	16	3"	No 3011	\$2.30	
4-08	1"	8	3"	No 3014	\$2.60	
4-16	1"	16	3"	No 3015	\$2.60	
5-08	1 1/4"	8	4"	No 3018	\$2.90	
5-16	1 1/4"	16	4"	No 3019	\$2.90	
8-10	2"	10	4"	No 3907	\$4.20	
8-10/7	2"	10	7"	No 3907	\$7.20	

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AR55

the introduction of the Novice licence to Australia. The purpose of the contest was to encourage newcomers to amateur radio towards contest activities, at an easy, friendly level.

The first contest was held over the weekend 10-11th December 1977. It was a moderate success. With much publicity, another attempt was arranged during 1978, but no sooner had the Westlakes Novice Contest gone to air than the problems arrived.

The major problem was that half of the two main organising team was transferred to P29. During the 1979 Gosford Field Day, the Federal Contest Manager was informed of the success of the contest and the new problem. It was stressed that although the contest was a great idea, the mere fact that an organisation, apart from the WIA, was conducting it might be construed as 'dividing the camp'.

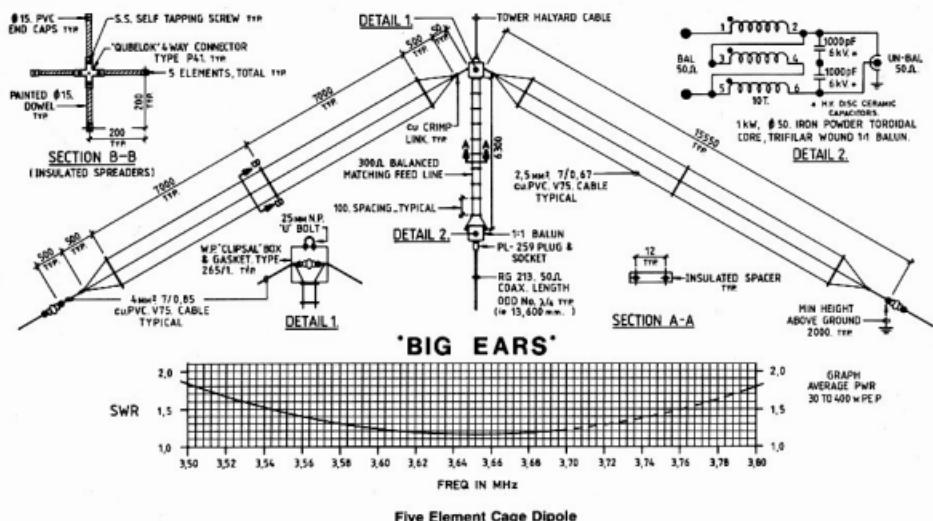
Letters were exchanged during 1979 with WIA Federal Executive and the Westlakes Club. In the interim, Westlakes would supply the remainder of the handsome certificates for overprinting and also the contest trophy. At Westlakes request, the original trophy was deleted. It was agreed that another trophy, called the Keith Howard, VK2AKX Trophy be accepted. By way of explanation, Keith, a WIA Life Member, also played a major role in getting the Novice licence started. As well, he had a record of educational achievements, most notably, the compilation and printing of the Manual of Questions and Answers, for the Novice licence.

The new conditions were accepted, with the contest to be known as the Australian Novice Contest.

At present this contest is held in September and is known as the VK Novice Contest. Due to a variety of reasons, the original concept of the contest appears to have changed.

Much of the success of this contest depends upon the participation by the amateur fraternity at large. Next year, see if we can have a record participation.

Condensed from Westlakes ARC — Monthly Newsletter, August 1985



'BIG EARS', A HALF-WAVE BROADBAND ANTENNA

For 75 and 80 metres in restricted space

The author lacks the space necessary to construct a full half-wave dipole, but required a broadband antenna which could be fed directly by a solid-state transceiver without needing an antenna tuner. The resulting cage design, aptly known as 'Big Ears', performs extremely well over the whole band.

This antenna was constructed last January because the original dipole just did not have the receiving capabilities to scheck with RSARS members in the Eastern States and overseas. As expected from the SWR curve it runs very smoothly with the solid-state rig (IC730) over the full 200-1440 kHz bandwidth without the use of an ATU.

The broadband characteristics result from the use of a 400 mm diameter cage rather than a single wire. The antenna is only 0.38 wavelength at mid-frequency (3.11 metres or 102 feet), so exhibits capacitive reactance at its centre. This is transformed by the parallel line feed section to become slightly inductive. An alternative way of looking at this is that the centre 300 ohm feed section of approximately 0.08 wavelength extends the antenna to just beyond half-wave resonance. Shunt capacitors then parallel-resonate with the inductive reactance. Due to their opposing reactance-frequency behaviour, this combination of parallel resonance with the inherent series resonance of the dipole further aids in bandwidth

BALLIN

The antenna will work quite well without the 1:1 balun, but receiving performance suffers due to local noise pickup which otherwise cancels out when the balance is better. Also the radiation pattern may become slightly asymmetrical without the balun. The toroidal balun core is one of the "Amidon" range, and the wire gauge is chosen so that the trifilar winding can be comfortably wound on to it. 18 or 20 gauge wire is suitable.

The shunt capacitors are very generously over-rated. In all probability a single 470 or 510 pF unit of 1 kV rating or better would suffice, but the two 6 kV items were on hand and ensure that failure here is virtually impossible.

The coaxial feed

wavelength. This also is not essential, but the accuracy of the SWR curve cannot be guaranteed for other lengths.

with stations such as A71AD, YC4FPE, ZL1ON, J1QUPA, ON5YVA, E18H, DJ4XH, WA6SLO, 9M2CO, SP9MR0, IBSAT, HA5XW, Z21EV, OK3EY, YU4EBD, G3FPQ, H44IA and G13OQR using FT102 and IC730 rigs on SSB. These stations were not all worked on 75 metres, but at the top end of 800 metres. Many incoming reports were 5x8 or 5x9.

Incidentally, if a different centre frequency (within 100 kHz or so) is required, it can be lowered by adding 125 mm to the 300 ohm feedline for each 20 kHz change, or conversely raised by similar shortening.

One practical point is that the cage section, both top and bottom, requires support from two points using heavy duty nylon fishing line to prevent the cage from turning in strong winds.

In the installation tested, the central tower is 10 metres high, with a 1 metre outrigger at the top to the tip of which the halyard pulley block is attached. The two cage halves then slope down to a height at their ends of 3 metres.

ANTENNA TUNERS WITH PARALLEL TUNED CIRCUITS

Leo Weller VK3YX
46 Pepperell Avenue, Syndal, Vic. 3150

It is an accepted fact that some antennas are easier to match to the transmitter than others. The number of hard-to-match ones are, too often, demonstrated on the amateur bands by a strong carrier going up and down in level for some 30 seconds before talking commences. In the course of experimenting with three antennas for the 15 metre band, three tuners were built to facilitate quick change over. There is no apparent reason why any of the three tuners could not be made to work equally well with any antenna. But problems arise when they are least expected (Murphy's Law again!).

Having established problems with some antenna tuner-circuit combinations, a number of different tuners have been built and their characteristics noted. This article describes five different tuners using a parallel tuned circuit.

INPUT CIRCUIT

In the following circuits an input capacitor will be found. This gives the tuner a high impedance until it is tuned. Many circuits use a capacitor in the output circuit, however it will perform its task equally as well on the input side. In particular, when the CW mode is used for tuning purposes, the author believes that the output transistors are safer.

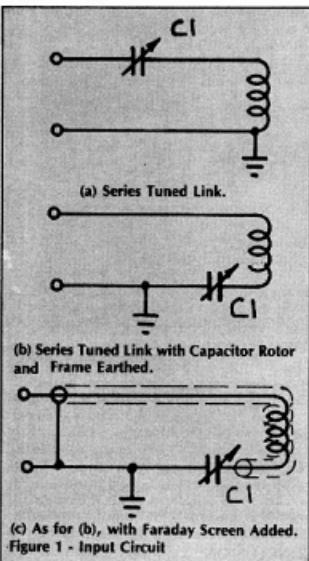


Figure 1 - Input Circuit

In some situations, it may be easier to earth the frame of this tuning capacitor. Figures 1 (a), 1 (b) indicate two circuits which are electrically the

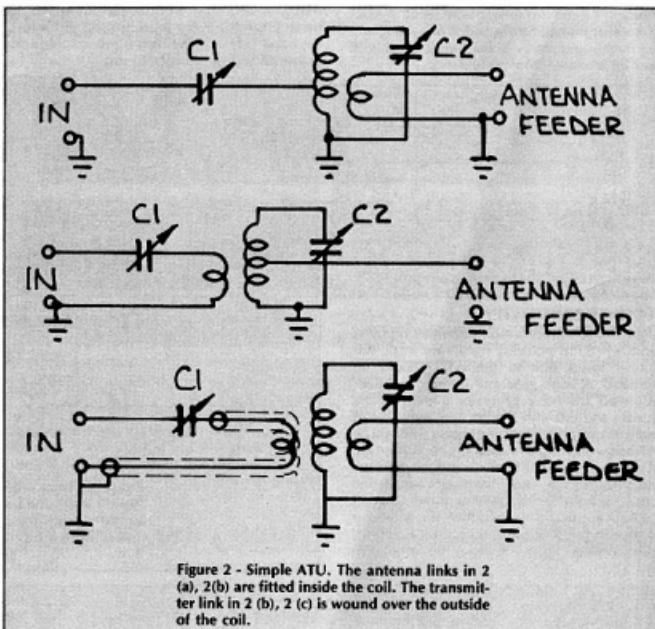


Figure 2 - Simple ATU. The antenna links in 2 (a), 2(b) are fitted inside the coil. The transmitter link in 2 (b), 2 (c) is wound over the outside of the coil.

same. It was found that the capacitance between the coil and coupling link played an adverse role. This was eliminated by introducing an electrostatic (Faraday) shield. Coaxial cable was used to wind the link. The screen was earthed at one end only, usually at the input socket, and is cut back 1cm on the other end. This link is always located on the earthed side of the main coil, to reduce the probability of flash-over.

SIMPLE ATU CIRCUIT

The circuit in Figure 2 (a) is so simple that one cannot escape testing it first and that of Figure 2 (b) next. Both circuits exhibited some interaction

between the two tuning capacitors which was eliminated by using the circuit of Figure 2 (c). This also gave a remarkable reduction in received noise from local devices such as vacuum cleaners and washing machines.

TESTING FOR COUPLING FACTOR

A watt meter, if available, is the correct instrument to use however, an SWR meter will also do the job. The purpose of this test is to establish that the turns ratio or tapping positions are correct. Adjust the ATU to provide a 1.0:1 SWR with the antenna connected. Connect the transmitter to a dummy load via the SWR meter. The VSWR

should be 1.0:1. Set the transmitter output power to a low level and adjust the SWR meter for full scale deflection in the 'forward' mode. Now connect the tuner instead of the dummy load. If all is well the SWR meter will read the same. If it reads low, the coupling must be increased. The SWR meter does not always tell the whole story. (Or the whole truth. Tech Ed.) Although the SWR meter might indicate that the correct match has been achieved the forward indication is a very sensitive comparator. The CW collector current is also a sensitive indicator of incorrect adjustment. If the coupling is too light, the tuning of C2 will be very sharp and if the coupling is too heavy, the tuning will not be effective. Incorrect coupling can also result in very high RF currents in the tuner, which will lead to increased power loss in the tuner.

AUTOTRANS ATU

The name originates from the autotransformer, due to the similarities of operation. Figure 3 illustrates a circuit suitable for use with plug-in coils and receiver type tuning capacitors. The wires and the taps must go at right angles from the coil for at least half a coil diameter, before being bent to ensure that no half turn is added or subtracted. The frames and rotors of the tuning capacitors must be insulated from ground.

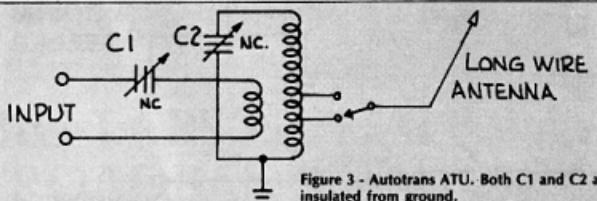


Figure 3 - Autotrans ATU. Both C1 and C2 are insulated from ground.

RECEIVER SENSITIVITY

Receiver sensitivity is most important on quiet bands when the incoming signals are weak. Additional losses due to the ATU should be evaluated. A noise generator is recommended.

Connect the noise generator directly to the receiver and establish a noise level sufficient to distinctly override the receiver noise. This will be well below an S1 meter indication. Next insert the ATU between the noise source and the receiver. The ATU must previously have been adjusted to give a 1.0:1 SWR with a 50ohm dummy load. If the ATU has negligible loss, then the generator noise will still override the receiver's internal noise. (A loss of up to 1dB should be acceptable. Tech Ed.)

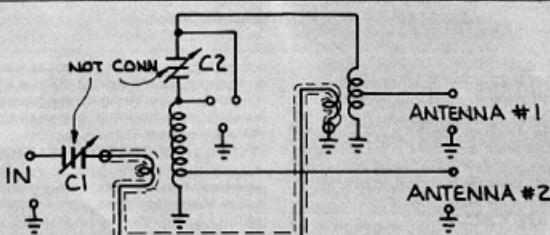


Figure 4 - All Band Tuner. Both C1 and C2 are insulated from ground.

ALL BAND TUNER

This is another simple circuit using old broadcast receiver tuning capacitors. The capacitor frames and rotors must be insulated. Two coils are used, a switch short circuits the one not being used. See Figure 4.

The links are made of coaxial cable with both the inner and outer being shorted to ground at one end. The link is of two turns on the high band coil and three turns on the low band coil. Shorting the unused coil effectively shorts the associated link.

INTERACTION TEST

Load the tuner with a dummy load and adjust for a 1.0:1 SWR in band centre. Now check to see if a 1.0:1 SWR can be maintained across the band by adjusting the main tuning capacitor, only.

Repeat this test with the antenna connected but start at the resonant frequency of the antenna instead of band centre, if these differ.

Ideally C1 is only adjusted when the band is changed and can be fitted with a clicker plate to make tuning quicker. See Figure 5.

In practice, with an antenna connected, a perfect match will not be achieved right across the band but, with the right tuner, the residual mismatch will be acceptably small.

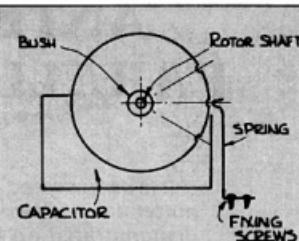


Figure 5 - Clicker Plate for C1. (The clicker plate could be made from brass sheet and soldered onto a bush fitted with a grub screw to facilitate fitting on the rotor shaft...Tech Ed.)

LONG WIRE MATCHER

This circuit, shown in Figure 6, was found in various World War 2 transmitters, intended for use with random lengths of wires. With broadcast tuning capacitors, it will tune two bands without a coil change, but a switch is needed to select the correct tappings, which can be found by experiment.

A good earthing system is required for this antenna system.

IMPROVEMENTS TO THE ALL BAND TUNER

It must be realised, that with a tuner covering the 10, 15 and 20 metre bands in one sweep, the width of the 20 metre band is only 15 degrees out of the 180 degrees sweep.

For ease of tuning a slow motion mechanism is recommended. The disc and spindle drive from an old radio receiver is perfect. A disc of 5cm diameter is sufficient.

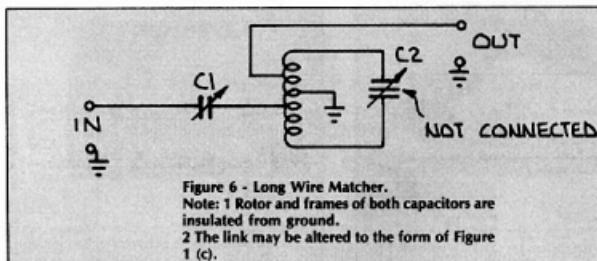


Figure 6 - Long Wire Matcher.
Note: 1 Rotor and frames of both capacitors are insulated from ground.
2 The link may be altered to the form of Figure 1 (c).

TRANSMATCH ATU

The transmatch, (from Z51CK back in 1947), feeds the transmitter from the rotor of the split stator capacitor, while the output is from point A. See Figure 7. Tuning requires care as there is some interaction between C1 and C2.

I found that by tapping the output down to two turns from the coil end that C1 was no longer critical of adjustment and could be replaced by switched fixed capacitors to suit the bands and antenna in use. For a 100 watt transmitter the necessary capacitor plate spacing is 1mm.

CONCLUSION

In the preface, it was pointed out that easy tuning depends on the correct tuner-antenna combination. The circuits described will pass all tests mentioned in this article, but not necessarily on

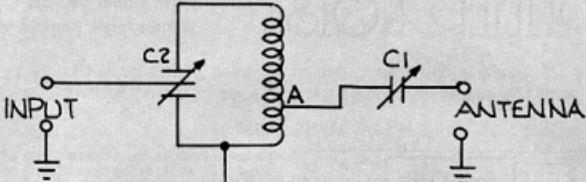


Figure 7 - Transmatch.

"FLYING HIGH WITH AMATEUR RADIO"

Earlier this year WICEN and the Western Suburbs Radio Club promoted amateur radio in many ways before over 150,000 people.

The occasion was the Melbourne Airport Open Weekend organised by the Keilor Rotary Club, with participating organisations including the Department of Aviation, Ansett Airlines of Australia, Trans Australia Airlines, Qantas, Royal Australian Air Force, Victoria Police, Australian Army, State Emergency Service, Wireless Institute Civil Emergency Network and others. Static displays of aircraft and associated equipment were presented, along with vintage, military and civil aircraft. Enthralled crowds were also treated to aerobatic displays and fixed wing aircraft and helicopter manoeuvres.



Left to right Mark VK3PI, Rob VK3VOE and Gordon VK3YOD perusing safety equipment within the Ansett hangar, and next to the Club exhibition.

by their own images displayed on a monitor. Members of the club explained many aspects of amateur radio to the public, whilst operating equipment and demonstrating operating practices. A promotional videotape, on loan from the Victorian Division of the Wireless Institute of Australia, ran continuously for the duration of the event, and assisted in outlining fields of amateur radio not able to be demonstrated in practice, such as SSTV, RTTY, Satellite work and emergency communications.

Twenty five Region 14 and two Region 8/26 Wireless Institute Civil Emergency Network members provided communications between services such as the Department of Aviation, Victoria Police Force, Country Fire Authority, State Emergency Service, and others. An amateur television link was also provided on simplex, between the State Emergency Service location, and the Command Centre. This link displayed logistics information relating to traffic control, and was of benefit to the Department of Aviation, State Emergency Service, and Victoria Police.

It was interesting to note that when a fire broke out in one of the public car parks, WICEN passed the message directly to the Country Fire Authority, and as the CFA were co-located with WICEN in the Police Caravan, action was prompt. The incident proved to be an effective demonstration

every antenna. The most convenient solution to the problem of rapid frequency shifting may be one tuner for the low band and one for the beam.

The author calls these tuners 'up-tuners' as the received signal increases on the correct setting. Only a 5 watt signal is required for tuning to a 1.0:1 SWR which is accomplished in 2 to 3 seconds. Details of the number of turns in the coils have been omitted because the author used many components that were on hand and these may not be available to many readers. Should any readers wish for further details, they are welcome to write to the author. (Include an SAE please. Tech Ed.)

Mark J Stephenson VK3PI
PO Box 163, Whittlesea, Vic. 3757

of WICEN being utilised to provide communications between services with non-compatible communications systems.

Overall communications was conducted on VHF and UHF simplex, and the exercise proved to be of training value, and a worthwhile public relations effort. This was particularly true in proving to other members of the Region 14 Disaster Committee that WICEN Region 14 are capable in providing reliable ancillary communications, in a responsible manner.

To those amateurs involved in both facets of the Open Weekend would be a considerable task, however, let it be said that both the Western Suburbs Radio Club and WICEN Region 14-8/26 members are to be congratulated on their enthusiasm in promoting our hobby in such a professional manner. A special thanks to Norm Dench VK3DNE for his enormous personal contributions in assuring the success of both efforts. To all concerned well done!!!

WICEN PHOTOGRAPHS courtesy Ted Borowiecki VK3DKX.
WESTERN SUBURBS RADIO CLUB PHOTOGRAPHS courtesy of Mick Van Geyzel VK3KMR.



Portable operators, Colin VK3LO and Lawrie VK3AW.

AMPLIFIER NOISE

Lloyd Butler VK5BR

18 Ottawa Avenue, Panorama, SA, 5041

Amplification of low level audio or RF signals is always accompanied by noise generated in the amplifier itself. The following discusses the generation of this noise and some of the methods of assessing noise performance.

One of the factors which governs the performance of any amplifier system is the noise in the system. Noise might be defined as signals in the system which are unwanted and which degrade the desired signal content in the system.

As far as the amplifier system is concerned, noise can be divided into noise it receives at its input and noise it generates itself. A good system is one in which the noise generated by the amplifier itself is small compared to noise from the incoming source. In a HF receiver, for example, atmospheric noise is high and it is not difficult to achieve this requirement. At VHF and UHF, atmospheric noise is low and performance is limited by the noise generated in the first stages of the radio receiver.

Noise is generated in all stages of amplifiers and radio receivers but it is the first stages, operating at the lowest signal levels, which are of main concern, particularly where low signals from aerials, microphones, etc, are to be amplified.

THERMAL NOISE

There is no such device as a perfect amplifier, but assuming such a device could be built, there is still a limit to how low a signal level can be detected. Figure 1 shows an amplifier fed from a signal source which has a resistance R_s . Thermal noise in the resistance generates a noise voltage (E_t) as follows:

$$E_t = 2\sqrt{KTB}R_s$$

where

K = Boltzmann's constant
 T = Absolute temperature
 B = Bandwidth in Hertz

At normal temperatures (say 17°C), this simplifies to:-

$$E_t = \sqrt{1.6 \times 10^{-23} \times B R_s}$$

Short of fitting the source in a cryogenic chamber, this is the lowest noise which can be achieved at the amplifier input and the practical equivalent noise at the input as always higher than this.

EQUIVALENT NOISE VOLTAGE

Whilst noise generated by an amplifier system is generated within the system, the level of noise is evaluated by referring it to the amplifier input, that is, it is considered as equivalent noise at the input as though it were being generated at that point. The equivalent noise voltage (E_n) is calculated by dividing the noise measured at the amplifier output (E_{no}) by the gain of the amplifier (A_v).

$$\text{ie } E_n = \frac{E_{no}}{A_v}$$

BANDWIDTH

Noise in any system is dependent on bandwidth of the system and this must be specified when defining noise performance. It is common practice to define noise for a 1 Hz bandwidth, for example, noise voltage might be specified in nanovolts per square root of Hertz (nV/ $\sqrt{\text{Hz}}$).

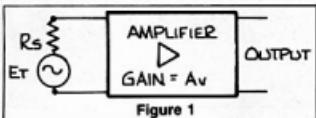


Figure 1

Over a limited bandwidth, noise power can be considered to be proportional to bandwidth and noise voltage proportional to the square root of bandwidth. If noise voltage is defined for a 1 Hz bandwidth system noise can be determined by multiplying by the square root of the system bandwidth.

The level of noise generated by an amplifier system generally varies over a wide spectrum, and for a wide bandwidth the noise performance must be defined by plotting noise (say in nV/ $\sqrt{\text{Hz}}$) against frequency.

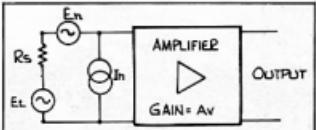


Figure 2

EQUIVALENT NOISE VOLTAGE AND CURRENT GENERATOR

In considering solid state amplifiers, noise is often resolved into two components at the amplifier input, an equivalent noise voltage generator (V_n) and an equivalent noise current generator (I_n) (refer figure 2). The first component (V_n) is independent of the value of source resistance (R_s). The second component (I_n) develops a noise voltage across R_s equal to $I_n R_s$, that is, the noise voltage it develops is directly proportional to the value of R_s . V_n can be separated from the voltage developed by I_n and also the thermal noise (E_t) by short circuiting the input terminals. The voltage developed by E_t and I_n is then zero and what is left is the noise voltage generator V_n .

NOISE FIGURE

One method of defining the noise performance of an amplifier is the noise figure (F). This can be defined as the ratio of equivalent noise power developed at the input to that generated by thermal noise in the source resistance (R_s). Noise figure is often expressed in decibel form. A perfect amplifier, if such a device were possible, has a noise figure of 0 dB.

To establish noise figure, the voltage gain (A_v) of the amplifier is measured and the noise voltage output (E_{no}) is measured at a known bandwidth (B). For the second measurement, the amplifier input must be terminated in a resistance (R_s) equal to the normal source resistance. Noise figure is calculated as follows:

$$F = 20 \log A_v \cdot \sqrt{1.6 \times 10^{-23} B R_s} \text{ dB}$$

Figure 2 and the formula assumes a high im-

pedance input to the amplifier. The effective value of R_s , as far as the calculation is concerned, is the parallel result of the source resistance and input resistance of the amplifier. If the source is a transmission line and it is terminated in its characteristic impedance (Z_0), then R_s should be substituted by a value Z_0 divided by 2.

TRANSISTOR NOISE

The value (V_n) of the equivalent noise voltage generator in a bi-polar transistor can be calculated from the following formula:-

$$V_n = \frac{0.0147 \text{ nV}/\sqrt{\text{Hz}}}{\sqrt{I_e}}$$

where I_e = Emitter current in amps.

Note that the noise voltage is entirely dependent on emitter current and decreases as the emitter current is increased.

Derivation of the value of the equivalent noise current generator is more complicated. Its value is dependent on various constants which vary with transistor type and which also vary between selected samples of the same type. For lowest noise, it is therefore necessary to select samples on a test basis. The noise current is also dependent on emitter current and frequency. Figure 3 illustrates a typical change in noise current with frequency for a bipolar transistor, giving a rise in noise current below 1000 Hz. Above 1000 Hz, noise current is constant.

In contrast to the value of the noise voltage generator, the noise current value increases as emitter current is increased. The noise voltage developed from the noise current is further dependent on the value of source resistance (R_s) through which it flows. (Refer previous paragraphs).

In consequence, for a given transistor, at a given frequency, there is an optimum emitter current for each value of source resistance (R_s), the point at which the curve showing the noise voltage generator (negative slope) intersects with that of the appropriate curve showing noise voltage derived from noise current generator (positive slope), refer figure 4.

At low values of source resistance (say 50 ohms), the equivalent noise voltage generator is the predominant factor and lowest noise is achieved at emitter currents in the order of several millamps. At higher impedances, (0.1 to 1 megohm), noise voltage developed from the noise current is predominant and emitter currents in the micro-amp region must be used to reduce the noise. (It is also of note that if common emitter configuration is used, these low emitter currents are necessary to achieve the high input resistance required).

For a low source resistance, a low noise bi-polar transistor works well and provides high gain. A typical noise current is 0.1 pA/ $\sqrt{\text{Hz}}$ and of little consequence developed across the low source resistance. For a high source resistance, a low noise field effect transistor is more suitable. Noise current at the input of a field effect transistor is a fraction of that for a bi-polar transistor and even at high impedances, the equivalent noise voltage generator is the predominant factor. For low noise, drain

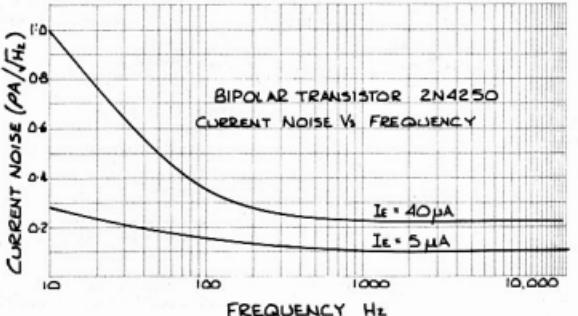


Figure 3 — Bi-polar Transistor 2N4250 Current Noise Vs Frequency

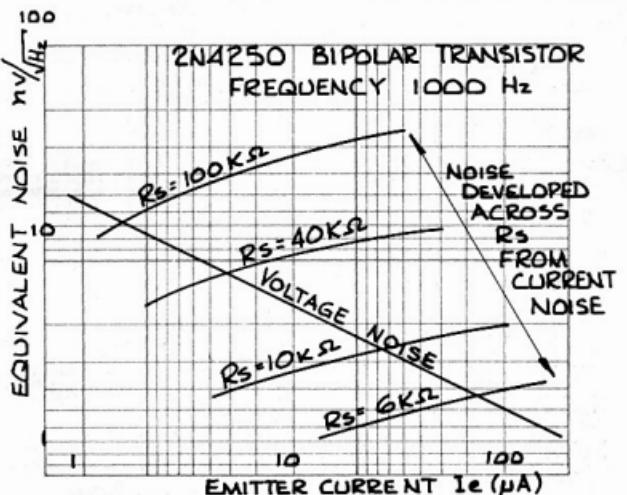


Figure 4 — Emitter Current I_e (μ A)

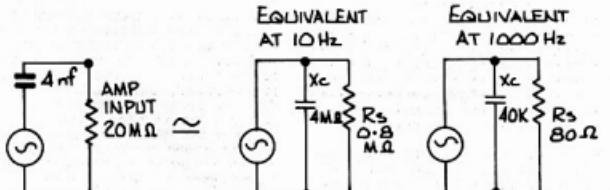


Figure 5 — Piezo Electric Device Equivalent Parallel Resistance.

current in the order of 2 to 10 mA is used.

Field effect transistors have found quite universal use as low noise front end amplifiers in VHF and UHF receivers where their gate is connected across the high impedance input of a tuned circuit.

A TYPICAL NOISE PROBLEM

One typical noise problem occurs when a piezo electric device (such as a microphone) is used at audio frequencies and connected to the input of an amplifier. At audio frequencies the device can be considered as a generator in

series with a small capacitance (refer figure 5). Supposing the series capacitance were 4 nF and frequency response down to 10 Hz were required; the device must then be terminated in not less than 20 megohms to achieve response at the low frequencies. Referring again to figure 5, it can be shown that such an example places a resistive component across the amplifier input of 0.8 megohms at 10 Hz compared with 80 ohms at 1000 Hz. The high equivalent source resistance at the low frequencies is a problem where amplifier current noise develops a noise voltage across that resistance. Quite apart from amplifier noise, the high value of R_s puts a limit on the lowest noise voltage achievable due to factor KTBR.

Bearing in mind the problem discussed in the previous paragraph, the writer tested a number of different operational amplifiers and discrete transistor circuits to compare noise at the input using the 4 nF and 20 megohms example. Table 1 shows the results obtained.

Table 1. Measurements of Equivalent Noise at Input for Various Devices in Nanovolts/√Hertz

Device	$R_s = 0.8$ megohms $f = 10$ Hz	$R_s = 80$ ohms $f = 1000$ Hz
OP AMP OP7	.773	18
OP AMP OP9	2711	18.5
OP AMP NE5534A	7553	18
OP AMP AD510	782	29
OP AMP LM101	330	258
OP AMP LM140	252	45
OP AMP AD524	3374	19
OP AMP BB5523	1919	21
OP AMP LM308	256	32
OP AMP pA776	1211	38
Balanced bi-polar amplifiers	450	8
($I_c = 2 \times 5 \mu$ A)		
Balanced bi-polar transistors 2N4250 ($I_c = 2 \times 10 \mu$ A)	207	15
Balanced FET transistors 2N5523 ($I_c = 2 \times 1 \mu$ A)	130	6
Thermal Noise limit (2 KTBH)	126	1.3

Discrete bi-polar transistors running at very low collector currents demonstrated a lower noise voltage than the operational amplifiers tested. At low frequencies, where the value of R_s is high, the FET gave the best performance. At higher frequencies, where the value of R_s is low, the bi-polar and FET transistors are comparable. Had the bi-polar transistors been run at milliamperes of collector current instead of microamps, they would have out-performed the FET transistors at the higher frequencies but been unsatisfactory at the low frequencies where R_s is high.

One interesting device, not yet tested, is the Burr-Brown OPA111 FET operational amplifier. According to the curves published for this device, it would produce noise figures comparable with the discrete FET transistors tested. (At 10 Hz with an $R_s = 1$ megohm, noise voltage would be 120 nV/√Hz. At 1000 Hz with an $R_s = 100$ ohms, noise voltage would be 7 nV/√Hz).

MEASUREMENT OF NOISE

To measure equivalent noise voltage at an amplifier input or to measure noise figure the following is required:

A means to measure RMS noise voltage over a controlled bandwidth.

A means to measure the voltage gain of the amplifier.

Voltage gain can be measured using a signal generator and calibrated CRO suitable for the frequency spectrum of interest. A spectrum

analyser is very useful to measure noise voltage as it usually has a defined bandwidth or means to adjust bandwidth over which the measurement is made.

Equivalent noise (E_n) in nanovolts/Hertz is calculated from the measurements as follows:

$$E_n = \frac{E_{\text{out}} \cdot 10^9}{\sqrt{B \cdot A_v}}$$

where E_{out} = Measured noise output voltage

A_v = Amplifier voltage gain

B = Bandwidth of measurement in Hertz

THE NOISE DIODE

One means used to measure noise figure in the VHF and lower UHF region is to use the thermionic noise diode (refer figure 7). Plate current is fed through resistance R_s , which becomes the source resistance of the noise generator formed. The plate current is controlled by varying the filament voltage of the diode. It turns out that for a temperature limited diode, the noise component of the plate current is precisely related to the DC plate current as follows:—

If the plate current is adjusted so that the noise power in the receiver being tested is double that for zero plate current, then noise figure is:—

$$F = 0.02 I R_s$$

where I = the plate current in millamps.

For a source (R_s) = 50Ω , the formula is $F = I$, hence the noise figure can be read directly from the plate current value.

Equivalent input noise power for the receiver is KTBI and the equivalent input noise voltage (E_{i}) is:—

$$E_i = \sqrt{1.6 \times 10^{-3} I R_s} \text{ V}/\text{Hz}$$

Many years have passed since solid state electronics phased out most uses of the vacuum tube and hence suitable tungsten filament diodes are not easy to obtain. An alternative noise generator can be made using a semiconductor diode (refer figure 8). In this case, the relationship between noise voltage and diode current will depend on the characteristics of the diode and for the device to be of any use in testing receiver performance, it must be calibrated against a known noise source.

Noise power change is best measured at the output of the IF amplifier in the receiver. In an AM receiver (but not an FM receiver), audio noise power can be measured. The method is to gradually increase the diode current until the power indication is double, or if an AC voltmeter is used, until the voltage increases by a factor of 1.4 (Refer also to figure 9).

RADIO RECEIVER PERFORMANCE

A discussion on noise would not be complete without reference to specifications for receiver performance since such specifications are tied to amount of noise generated in the first stages of the receiver.

Amplitude modulation (AM) receivers are often said to have a given signal to noise ratio for a given input level in microvolts eg 15 dB S/N ratio for 1 μV of signal. What is assumed (if not quoted) is that noise power at the audio output is 15 dB below a 400 Hz or 1000 Hz signal demodulated from a 30 percent modulated, 1 μV signal at the receiver input. To get some idea of noise performance, the receiver band-

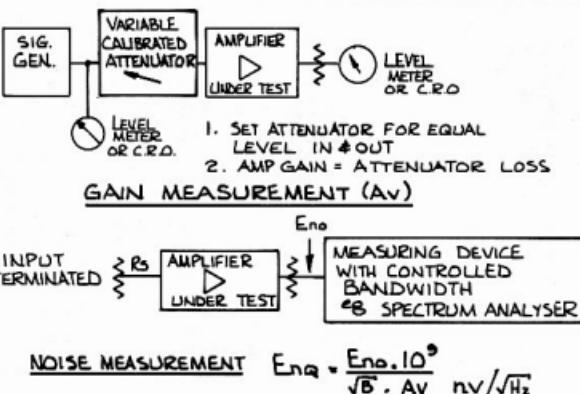


Figure 6 — Measurement of Noise

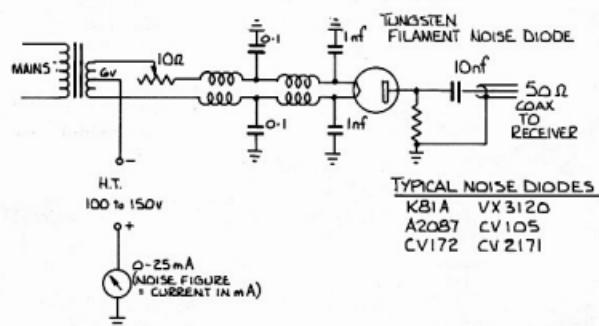


Figure 7 — Thermionic Noise Generator

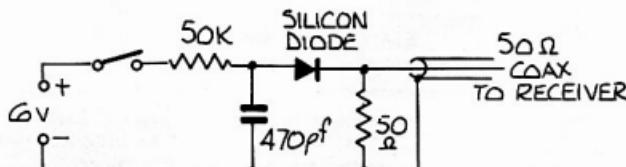


Figure 8 — Noise Generator using Semiconductor Diode

width must also be considered. A 15 dB S/N ratio for a 3 kHz bandwidth receiver is not as good a noise performance as one with a 15 dB S/N ratio with 6 kHz bandwidth.

A single sideband receiver might be quoted as 12 dB S/N ratio for 1 μV of sideband. This implies noise 12 dB below 1 μV , i.e. 250 nV. If the receiver has a bandwidth of 3 kHz and its input resistance is 50 ohms, thermal noise is calculated as 49 nV and noise figure is $20 \log(250/49) = 14$ dB.

The noise performance of a frequency modulation (FM) receiver is more difficult to define. Noise, as has been considered, is caused by random amplitude variation which the FM

demodulator is designed to reject. The noise takes predominance when the FM signal level falls to a critical level and it has been a practice to quote decibels of quieting for a given input signal level eg 20 dB of quieting for 0.5 μV . Whilst this gives an indication of the noise performance of the front end of the receiver it does not give assessment of the noise performance as an FM detector and an additional specification giving decibels of S/N ratio for an input signal deviated by a fixed amount is also required eg 20 dB S/N ratio for 0.3 μV signal deviated 5 kHz by 1000 Hz tone.

A more recent specification is SINAD performance. For this, a minimum signal input level

in microvolts is given which satisfies a given level (12 dB) of noise and distortion below a modulating tone (1000 Hz deviating 3 kHz in a 5 kHz maximum deviation system). To test a receiver, an FM signal generator, modulated by a 1000 Hz tone to a deviation of 3 kHz, is fed to the aerial input and the audio output is monitored with a distortion meter (refer figure 11). The input level is decreased until distortion read is 25 percent (ie 12 dB of noise and distortion below the tone level).

The difference between SINAD measurement and previous methods of measurement is that the tone is tuned out at the output of the receiver instead of switching off at the input signal source. With tone removed, noise components remain and in the SINAD case, include distortion components generated in the receiver by the tone itself.

A conventional method of measuring signal to noise ratio in an AM receiver is illustrated in figure 10. Performance testing of an FM receiver using the SINAD method is illustrated in figure 11.

SUMMARY

Low equivalent noise at the input is better achieved using discrete transistors with controlled collector (or drain) current rather than IC packages. Bi-polar transistors are good for a low source resistance but field effect transistors perform better for high source resistance.

Noise can be measured by a number of methods described. At VHF the noise diode is useful. Assessment of performance of FM receivers requires different test procedures to those for AM receivers.

AM

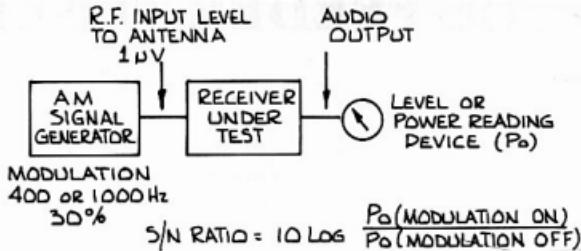


Figure 10 — Conventional S/N Ratio Measurement in an AM Receiver

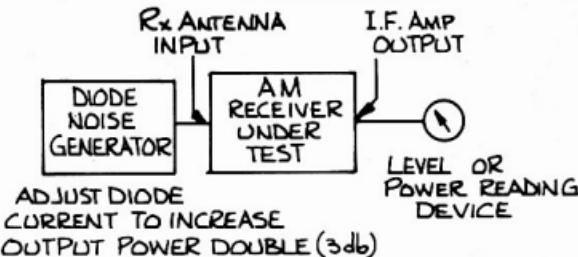


Figure 9 — Use of Diode Noise Generator

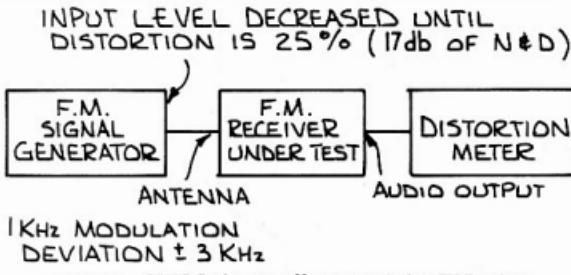


Figure 11 — SINAD Performance Measurement of an FM Receiver.

PROFILE OF TWO NEW MEMBERS OF THE WIA PUBLICATIONS COMMITTEE

The WIA Publications Committee is pleased to welcome two new members to its ranks, namely, Doug McArthur VK3UJM and Peter Gibson VK3AZL. Peter and Doug will add some new ideas to the Committee and will also be laden with technical editing.

Doug was first licenced in 1958, as VK5KK and later operated from Alice Springs and Darwin, as VK8KK.

He has been a member of the WIA since 1967.

Doug's main interest is VHF, UHF and specialist communication techniques with his 'pet project' currently, operation on 70cm EME.

Previously employed in High Power, TV, Microwave and Data Communications with the PMG, Doug is presently employed with the DOC.

Doug joined the WIA in 1963. In 1964, he became licensed as VK3AZL, at the age of 16, and has been actively involved on HF since that time.

Peter's main interest in the hobby is home brewing and has a wide variety of projects ranging from Test Equipment to a Synthesised Two Metre Transceiver.

He graduated as a Communications Engineer and was employed for 12 years with the Department of Transport and Aviation, working on Navigational Aids and then the development of Microwave Landing Systems. He is currently employed at Channel 7, Melbourne, as a Video Tape and Project Engineer.

Welcome Gentlemen — Ed.



DOUG MCARTHUR



PETER GIBSON

THE FEEDER TUNED ANTENNA

Bruce Hannaford VK5XI

57 Haydown Road, Elizabeth Grove, SA. 5112

If you want to work all HF bands including the WARC bands, with one antenna, without exhausting your patience or wearing out your finger tips by constantly retuning an ATU for each QSY, here is the system for you.

It is possible with three switch selectable feeder lengths, to do away with the need for an ATU, if the Antenna Matching Unit (AMU), also described, is used.

The switching can be done with a double pole, three position switch having good insulation, good sized and well spaced contacts, or alternatively by two DPDT switches or relays of similar construction.

This antenna design relies on broadly tuned antenna and feeder line lengths rather than sharply tuned lumped L and C, as in an ATU. The antenna arrangement is similar to the G5RV and the J pole, both of which can be fed with coaxial cable at the base of a tuned length of open conductor feeder. With the G5RV, only one compromise length of feeder is used and this really only suits the 20metre band. On other bands the SWR is often above 10:1. With three lengths of tuned feeder obviously three bands can be exactly tuned, or with a slight compromising of the 80 and 40 metre lengths, all the other HF bands can be covered with quite low SWR. More than three feeder lengths could be used, with additional switch positions, if so desired.

In the physical construction, a centre pole must be used to support the feeder selecting switch mounted on the pole and to hold the three feeder systems, extending from it, towards the shack. It is preferable that the outer poles be of equal height, but this is not essential. Shorter outer poles or inverted V construction can be used. Where space is a problem, the outer ends of the antenna radiator may be bent down, or sideways, for about 3m at each end, with very little loss of performance.

The three position switch can be a rotary type with the shaft pointing downwards and extended to near ground level by a long insulated shaft, such as a 4m length or more of orange coloured plastic conduit, as used in electrical work. It will probably be best to remove the switch clicker plate for easy turning and fit a pointer on the shaft at the bottom. Alternatively the switch can be extended mechanically to the operating position or motored in much the same way as an antenna rotator.

Open wire feeders have been shown for the tuned feeder sections in all cases, but these could be replaced by slightly shorter lengths of window type 300 ohm ribbon, if preferred. Multiply the open wire lengths given by the velocity factor, usually .82, to determine the length required. The coaxial cable can be either 50 or 75 ohms and the use of baluns at the antenna ends of these cables normally seems quite unnecessary. The open wire feeder lengths are only approximate calculated lengths, in practice these are only a guide, slightly longer lengths should be cut and then pruned to get the best results.

The electrical design is based on the principle that it is possible to do all necessary tuning by

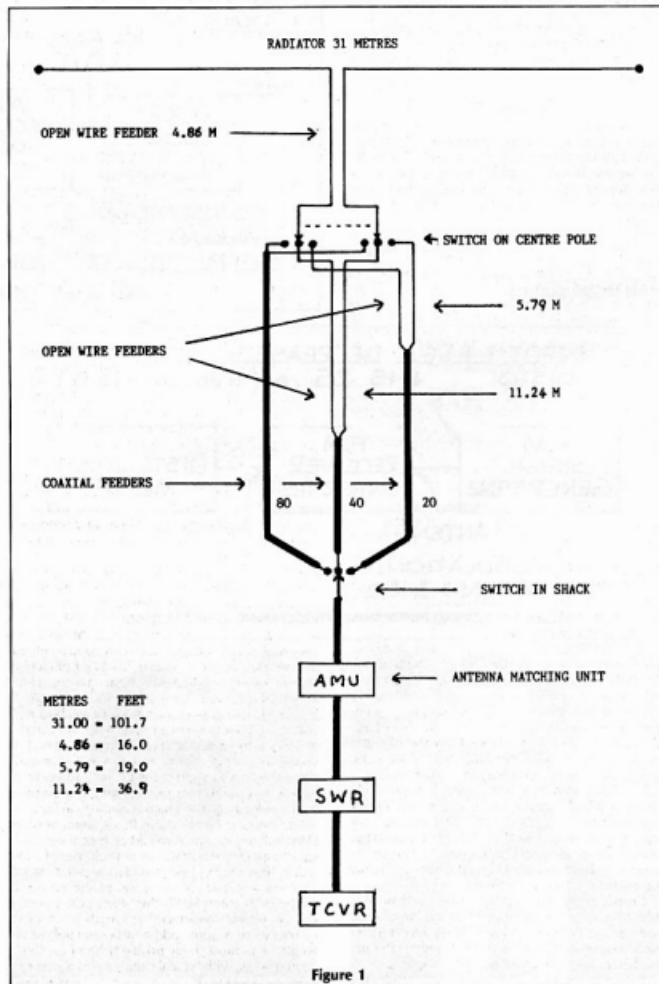


Figure 1

pruning the lengths of the radiator and the feeders used and any slight SWR remaining can be dealt with by the AMU described.

It is best to think of the radiator and open wire feeders as a continuous antenna length, a portion of which is folded up in the form of an open wire feeder at the antenna centre. Thought of in this way, the 80 metre system is a half wave with a slightly folded up centre portion. The 40 metre system is three half waves with a little over one half wave folded at the centre. The 20 metre system is five half waves with two of these folded at the centre. As we are considering resonant lengths and harmonic frequencies for long wire type operation, I first submit the following useful table of figures.

HALF WAVES	METRES	HARMONIC MULTIPLIER FORMULA
1	142.5	
3	442.5	3.11
5	442.5	5.21
7	1043	7.32
9	1343	9.42
11	1643	11.50
13	1943	13.60

NOTE: Half waves refers to the number of electrical half waves in the radiator and open wire feeders combined. Metres formula is the figure that must be divided by the frequency in MHz to obtain the metres length required. (Feet = Metres x 3.2808).

Harmonic multiplier is a figure used as a multiplier to the fundamental frequency to obtain harmonic frequencies. Eg: the third harmonic of the fundamental frequency is not exactly three times — it is 3.11.

Considering the above table and making calculations using it, we see the total length the 80 metre coaxial cable needs to 'see' for 3.5MHz is 40.71m. This is the sum of the radiator 31m plus both sides of the 4.86m feeder. To obtain the harmonic frequencies we use the multiplier table, 3 + 10.9, 5 + 18.2, 7 + 25.6, 9 + 33. So we see the harmonic frequencies suit the WARC bands if the 80 metre fundamental frequency is 3.5MHz or a little lower.

On 40 metres, the coaxial cable 'sees' three electrical half waves. Using figures from the table and calculating for three half waves, 7.0MHz is 63.2m. Using the multipliers, we find the fundamental frequency is 7.0 divided by 3.11 as 7.0 is the third harmonic frequency. So we get, 1 + 2.251, 3 + 7.0, 5 + 11.73, 7 + 16.48, 9 + 21.20, 11 + 25.89, 13 + 30.61. The 15 metre band is well covered by the ninth harmonic (a better ratio than first to third) and the 10 metre band is not far from the thirteenth harmonic.

On 20 metres, the coaxial cable 'sees' five electrical half waves, so the length needed for 14.2MHz is calculated as 52.3m. The fundamental frequency will be 14.2 divided by 5.21, as we are using the fifth harmonic. Resonant frequencies will be, 1 + 2.726, 3 + 8.48, 5 + 14.20, 7 + 19.95, 9 + 25.68, 11 + 31.35. Only the 20 metre band is 'spot on', but 10 metres may be reasonably close to the eleventh harmonic.

In all the above, more decimal places than necessary have been used so figures will check out reasonably well, in actual fact no such accuracy is possible. The slight velocity factor in the open wire feeders and the antenna thickness ratio have both been neglected, but the errors will only be small.

Considering the high order harmonics sometimes used, some may think the impedance seen by the coaxial cable would be very high indeed however, the folded portions reduce this impedance, so the overall results are good.

Before tuning-up the system, let us consider the height of the pole mounted feeder switch. The

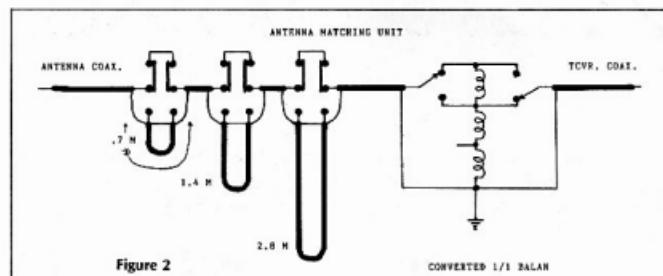


Figure 2

distance down from the top is shown on the diagram, but other heights are possible. If higher positions are used, the radiator will become longer and you may not have enough room. If lower positions are used, too much of the 80 metre half wave will be folded up in the feeder and poor results will be obtained on this band. The position shown is good, as it gives three half waves on the radiator for the 20 metre band, thus giving a very good radiation pattern. With typical pole heights of about 10m, the switch can be easily reached from a small home extension ladder, a very useful point. In the following, we assume the switch has been fixed at the height shown on the diagram and that the radiator, 40 and 20 metre feeder lengths have been cut a bit long to allow for exact pruning.

To tune-up the system, the feeder pole switch is set to the desired position then GDO readings are taken at each coaxial cable connection point before the cable is connected. Check at both the fundamental and any useful harmonic frequencies, pruning to get the best average results. On 80 metres, the antenna ends are pruned and for 40 and 20 metres, the open wire feeder lengths are pruned. Of course, 80 metres must be attended to first as the radiator length decided on will also be used for 40 and 20 metres. As all three feeder lengths give harmonics close to the 10 metre band, most likely all three will be suitable for 10 metres use, but at least one will be without any special tuning. Having attended to this pruning, the coaxial cables can then be connected, but leave them a bit long as they also may need to be pruned slightly.

As the coaxial cables will usually not be perfectly matched, the resulting SWR will mean the voltage, current and impedance along each cable will not be uniform throughout its length. At current maximum points, there will be low impedance and at voltage maximum points high impedance will be experienced. Starting from a high current low impedance point looking along a long length of coaxial cable with considerable SWR, an electrical quarter of a wave away will be a high voltage, high impedance point. A further quarter of a wave and it will be back to high current, low impedance once again and this will continue along the entire length of the cable. The electrical length is equal to the physical length multiplied by the velocity factor which is usually .66 for most solid type coaxial cables. In this system, as some SWR will be present, it would be nice if we could stick to electrical half waves or multiples of a half wave, thus having low impedance points at the antenna and transceiver ends of the cable. In cables with some SWR, the worst possible case will be where the electrical length is an exact quarter wave or some odd number multiple of this length. The most likely problem band for this is 80 metres as, with typical cable, this is about 13m of physical length. If 13m happens to be the length needed to reach your transceiver, even a few ex-

tra metres might well be worthwhile to reduce the problem.

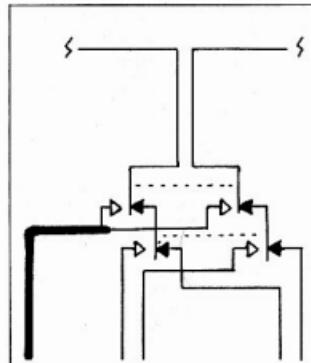


Figure 3 — An alternative switching arrangement using two DPDT switches or relays.

Looking at the Antenna Matching Unit (AMU), it will be noticed that provision is made for switching in additional lengths of coaxial cable and a RF matching transformer is also included. With the coaxial cable additional lengths available, the problems of difficult coaxial cable lengths can usually be overcome, but if difficulties still persist slightly different antenna coaxial cable lengths can be used. With the matching transformer a considerable range of impedances can be matched. The advantage of using this no lumped inductance or capacitance system is that no exact tuning is needed and the switch settings usually hold across an entire band.

Looking at the AMU diagram and the coaxial switching used it will be noticed that starting from the shortest length, the next is double the length and the longest is double this again, making it four times the shortest length. This arrangement, by the different switch combinations available gives seven possible additional lengths, so starting from zero a total of eight lengths are available. The lengths I have chosen will normally be satisfactory but other lengths may, at times, be better, but stick to the same 1, 2 and 4 ratios, so the switch adding will give a choice of seven additional lengths. It will be noticed that the braid of the coaxial cable is bonded in a way that could be considered as a short circuiting of its length but this does not cause any problems.

The matching transformer is basically a con-

verted 1:1 balun or you can buy a balun kit from a well known radio supply house and wind your own. In the diagram, I have shown the windings end to end for simplicity when actually they are interwound. It will be seen either a slight step up or step down can be achieved by changing the switch positions. Also, if both are set either up or down a 1:1 ratio is obtained. So three impedance matchings are possible, in practice giving reasonably close transceiver matching to antenna coaxial feeder impedances of about 15 to 150 ohms. The unused tap on the transformer could be switched in instead of the presently earthed

end to give an even greater range of impedance matching if desired, but I have found this unnecessary in my case.

To operate the system, watch the SWR meter and using a minimum of RF power run through all eight switch length positions in order starting from zero to the seventh added position, and do this for each of the three impedance matching conditions. If you write number 1 next to the switch adding the shortest length, 2 next to the medium length and 4 next to the longest length, it then becomes a matter of simple addition to get the number you require.

Unless your memory is much better than mine, you will need to record the best operating switch positions for each band. One way of doing this, is as follows, designate the three impedance positions as A, B and C and the length positions as 0 to 7 then all switch positions can then be recorded by a single letter and figure, so you can return to any desired setting with ease. The average SWR for this system across all HF bands (including WARC) is 1.2, proving it is possible to avoid using an ATU.

AR

A Solar-powered House and Amateur Station

We live in the village of Sarmai Atas, on the side of a hill about 80 km west of Jayapura, in the Indonesian province of Irian Jaya. We are surrounded by lush green forest, interspersed with gardens of taro, sweet corn, bananas, sugar cane, and coconuts. This is one of 25 villages where the Nimboran people live, whose language we have been studying for six years. The climate is hot and humid all the year round. As we are a long way from sources of electric power, our power needs are met by solar panels. These provide electricity for lighting, radio, and some other household items.

The basic system comprises a 12 volt battery, two ARCO solar panels of 30 watt output each, a voltage regulator, and distribution wiring to lights and outlets throughout the house.

The battery

Any automotive 12 volt battery can be used, and at first we had a standard 40 ampere-hour car battery. This had the usual disadvantage of needing maintenance and topping up, but it performed satisfactorily while it lasted. However, it is a better proposition in remote areas to have sealed gel-type batteries which need no maintenance, and can be carried in easily. We now have one of 38 Ah capacity which meets our needs well.

A battery that can't spill can be very important. One of our friends had her radio battery taken to town to be charged, before she had solar power installed. On the way back to her village, a 2½ hour walk, it was accidentally carried upside down, and when it arrived there was no acid left in it at all! Sealed batteries can also be carried safely and easily in light aircraft, such as serve some of the more remote villages.

The Solar Panels

The two panels are mounted side by side on the roof of the house. Here they are clear of shadows from nearby trees all day. They lie along the slope of the roof, an incline of one in four, so that rain will drain off quickly, taking any dirt or fallen leaves with it. They face slightly to the east, so as to make best use of the morning sunshine. Often the afternoons are cloudy, so a tilt toward the east is beneficial.

Output of the panels working in parallel in good direct sunshine is normally around 2.5 A. This is surprising at first, seeing that each panel can deliver just over 2.0 A on its own. The explanation can be seen from Figure 1.

Figure 1a shows a single-panel charging circuit. The source resistance is R_p , the internal resistance of the panel. The load resistance R_l is the sum of resistances in the wiring (R_w), the regulator (R_r), and the battery (R_b). The net EMF is the difference

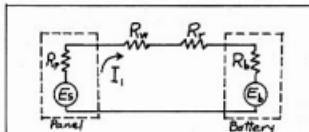


Figure 1a — Charging circuit with one panel.

between that of the panel (E_s) and the battery (E_b). Thus the output current for one panel is:

$$I_1 = \frac{E_s - E_b}{R_p + R_l}$$

If a second panel is connected in parallel, then the source EMF is the same, but the source resistance is now $\frac{1}{2}R_p$ (Figure 1b). The output current for two panels is:

$$I_2 = \frac{E_s - E_b}{\frac{1}{2}R_p + R_l}$$

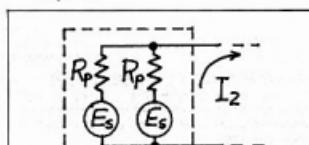


Figure 1b — With two panels.

Because R_l is not negligible, I_2 is always rather less than $2 \times I_1$. The real benefit of a second panel comes in cloudy conditions, when due to the lower illumination of the panel, R_p is greater. A smaller current flows, and the regulator, responding to a lower circuit voltage, reduces its own resistance R_r . Thus R_l becomes much smaller than R_p , and I_2 is much closer to $2 \times I_1$, and a worthwhile improvement in the rate of charge is obtained.

The regulator

The regulator controls the rate of charge, using a voltage sensing circuit to control a pass transistor. As the battery voltage rises to the fully-charged condition, the transistor reduces the flow of charging current to maintain a trickle charge. During the night, reverse current is blocked by the regulator to prevent battery discharge through the panels. It also has a meter to monitor the charge rate and battery voltage. Using this system, the house can be left unoccupied when necessary without danger of discharge or overcharge of the battery.

The load

Household lighting consists of a 10 watt fluorescent lamp in each room, each with a simple transistor inverter built in. A 304.8 mm (12 inch) square of aluminium foil behind the lamp makes a fine reflector, and the resulting light level is adequate. Apart from the radios, other equipment supplied from the battery includes an automotive-type stereo player, tape recorders, portable computer, and an organ. We also use a 12 volt soldering iron, a small power drill, and a food mixer converted from rechargeable batteries (when they failed) to run directly on 12 volts. However, the stove and refrigerator run on kerosene, because of their much higher power needs.

Outlets around the house are of the car cigarette-lighter type. A number of 12 volt appliances and adaptors are available nowadays with that style of plug already fitted, so they are convenient. They are safe as well, since you can't reverse the polarity by accident, as you can with some 2-pin plugs.

Radio Equipment

The main amateur transceiver is a TS-1305, working into either a TH3JR tribander, or a G5RV dipole. This unit is quite economical on battery power, which is very important to us as the amount of recharging each day is limited. I also have a 2-metre FM rig, which works into a homebrew 4-element quad. With reasonable

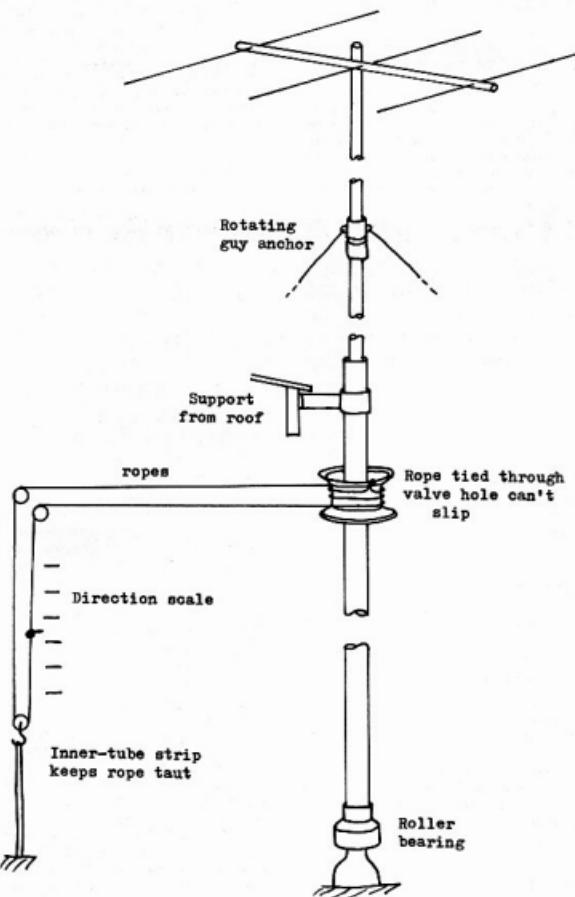


Figure 2 — Antenna rotator arrangement.



NEWS FROM THE ARRL

A reciprocal licence agreement has been signed by the USA and Japan, effective the 7th September 1985. The WIA awaits details of the agreement, prior to asking the Australian Administration to conclude a similar agreement.

The ARRL have obtained use of the 902-928MHz band for Technician Class Licences and above on a secondary, non-interference basis.

Amateur operators in the northern parts of the USA have had the 420-430MHz band removed from their allocation. At this stage, little is known as to the reasons, but we believe this action has been taken to protect Canadian Fixed and Mobile operations.

RADIO PRIVACY LEGISLATION

Legislation to protect the privacy of radio communications is suggested in a Department of Communications discussion paper, dated 1st September 1985.

Communications Minister, Mr Michael Duffy, said he was not considering legislation to prevent interception by unsophisticated devices, such as scanners and shortwave receivers.

Mr Duffy said however, that there was an increasing public desire to prevent the interception of messages which were commercially sensitive or vital to security.

An option in the discussion paper is to have legislation which will support users who go the trouble of encoding their messages.

Besides making it an offence to intercept certain radio messages, legislation could also control the supply of decoding devices which, enable people to intercept these messages.



Kevin YB9ARZ/VK5IV operating with Solar Power.

restraint on the length of time each week spent on the air, we have no problem with over-discharging the battery. Obviously, ideally prolonged sessions are not possible, but then we have other work to do too!

The beam antenna is rotated by the "armstrong" method, so that no power is needed for that. The antenna is mounted on top of two 6-metre lengths of water pipe telescoped together. The bottom of the pipe is supported on a car wheel-bearing, and a rotating guy-wire anchor allows the whole to turn freely. Near the house roof another support surrounds the pipe, close to a wheel from a Vespa scooter which is clamped to the pipe. A rope attached to the wheel is brought in over pulleys to the operating position, where a knot lies close to a scale on the wall to show antenna direction. Pulling one side or the other of the rope provides rotation of 1½ turns. The arrangement is sketched in Figure 2.

The G5RV antenna was built and erected over Easter this year. It is supported on two masts made of water pipes of three sizes telescoped end to end, and standing 14 metres high. It is mostly used on 80 metres, but will, of course, work on the other HF bands also. The antenna which I first used is a 20/15 metre dual band portable dipole, but this is now held in reserve for use when I am away from home for longer periods.

I first began amateur operating in Australia as VK5IV in 1982. In Indonesia I have had the call signs YB0ARK, then YB9ARK, and now YB9ARZ. I have also operated from Papua New Guinea as P29KM. The YB9 prefix is fairly uncommon, so that there is seldom a shortage of people to talk to. I mostly prefer chatting rather than DX-chasing, with its pile-ups and tensions, yet I have recorded a total of 67 countries contacted so far. It goes to show that one can get considerable satisfaction from the hobby of amateur radio with modest power output and simple equipment.

AR

In many cases, interception of messages is of no consequence, but in others, security or commercial reasons make confidentiality essential.

FOURTEENTH AUSTRALIAN JAMBOREEE

The 14th Australian Jamboree will be held from 29th December 1985 until 9th January 1986, near Wollongong, at Cataract Scout Park, about 6km from Appin. An amateur station, using the call sign VK2SAJ, will be set up on the highest part of the site for the duration of the Jamboree and will hopefully be manned 24 hours a day.

The antennas, an 80 metre dipole, two 40 metre dipoles, two 4 band beams with rotators, beams for 6 metres, 2 metres and 70 cm, and various ground plane antennas for 2 metres and 70cm will be mounted on three wooden poles about 20m above ground level. They will be arranged in a triangle. The shack will be a portable building, about 8m square.

COLLECTORS CORNER —

Featuring Bob Pallett VK3BEA

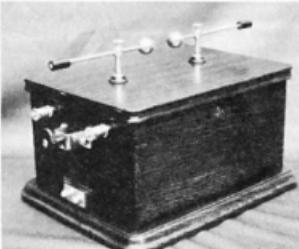
Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld, 4101.

One of the great attractions of amateur radio is that it allows a broad range of interests under its title. There is scope for endless diversity even among those whose hobby is homebrewing. For some, construction projects involving the silicon chip are the attraction; others like Bob Pallett VK3BEA turn their skills to recreating equipment used at the very beginning of WIRELESS — and now almost impossible to obtain.

The accompanying photos show the high degree of Bob's skill and craftsmanship.



The MAGNETIC DETECTOR (used by Marconi and others) not only looks as good as anything turned out commercially — it also works well. In Bob's words . . . "not quite as sensitive as the galena detector but picks up the local broadcast stations with good quality."



This shows an INDUCTION COIL housed in a box of exotic wood, with a spark gap mounted on top. The coil is simply one taken from an automobile. A 1 inch (25 mm) spark is possible.

VK3BEA's further artisan skills encompass making exact replicas of various component parts; eg vintage horn speaker drive units, gramophone pick-up heads, rare and odd shaped knobs, etc. In most cases they are so well done it's impossible to pick the imitation from the real thing. And no, he does not have an elaborate workshop. His tools are simple but effective — the main item being nothing more than a handy man's electric drill. Figure 1 is a sketch of the many ingenious ways Bob sets up and uses his homebrewed tools.

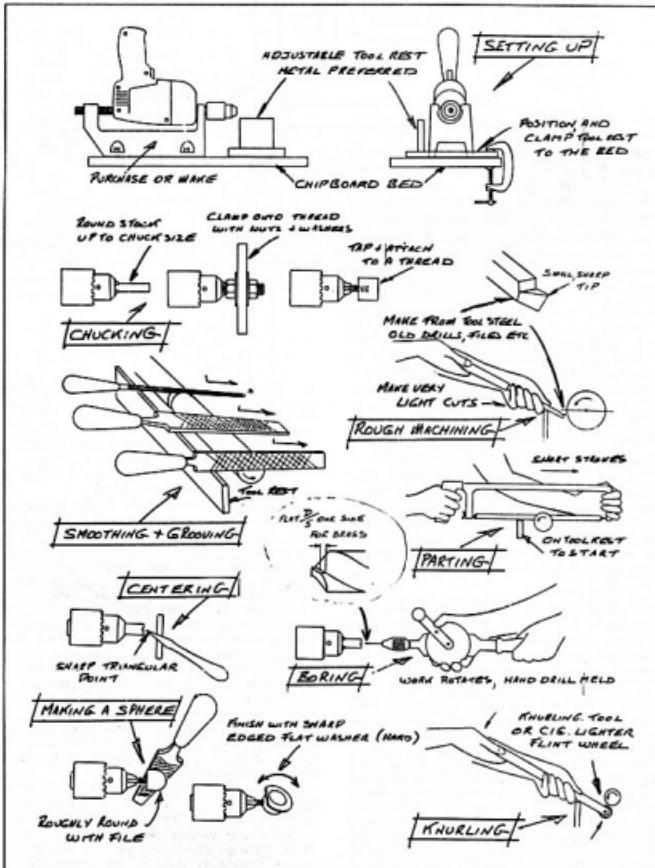
He is also a member of HRSA (Historical Radio Society of Australia) — group dedicated to the restoration and preservation of early wireless.



A COHERER DETECTOR in use at the turn of the century. This particular one, built by VK3EA, is not only a masterpiece of homebrewing, it works magnificently. Coupled into a GSR antenna it will register lightning strikes thirty miles (48 km) distant. Bob reports that the COHERER is very sensitive and has a very good on/off ohmic ratio.

Amateurs like VK3BEA are now very thin on the ground and they will be greatly missed when they QRT. No matter how well history is written, it is only by eyeballing and actually using the equipment of our pioneers that a real appreciation of their achievements is understood.

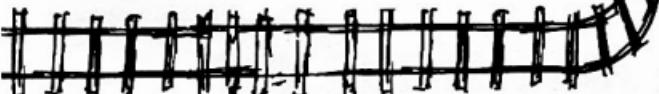
Other homebrewers working on similar equipment can write to Bob and swap information or ideas at 4 Ailsa Street, Dandenong Nth, Vic. 3175



RADIO STATION 3YB

— a radio station on wheels

The following is an abridged version of an article which appeared in NEWSRAIL, Volume 13, Number 5, and was written by Bruce McLean. Bruce arrived in Mildura in 1962 to commence a career in media at 3MA Mildura, subsequently moving to STV8 Television when it commenced operation in 1965. Upon learning of Bruce's interest in trains, the manager of 3MA, Max Folie, informed Bruce of his days as a technical engineer with 3YB when it was Victoria's mobile broadcasting station housed in a vice-regal coach, which is now a power van called "Melville". The notes Max presented to Bruce were written in 1966, by the late George Glover VK3AG, who was an engineer with 3YB. The call sign 3YB was derived from "Young of Ballarat". Newsrail is published by the Australian Railway Historical Society, Victorian Division.



At the beginning of 1931, Victoria had only four country radio stations, and the receiving sets then available, lacked the selectivity and range of the equipment of today. Further, most stations were operating with limited power so, unless in close proximity to a station, reception was very poor.

The Chief Wireless Inspector, Jim Malone and his Deputy Jack Martin, were anxious to give country listeners a better service and were naturally in favour of mobility when the idea was put to them by Mr J A Young, an employee of radio station, 3BA Ballarat.

They were however, somewhat dubious, so agreed to a permit for three months trial.

Support was obtained by Mr Young from several Melbourne business men and Mobile Broadcasting Services Pty Ltd was registered.

Two large motor caravans and one trailer housed the complete equipment which was constructed by Mr Bert Aldridge and thus 3YB was born. It left Melbourne on 11th October 1931 for its initial tour with the first broadcast from Clunes, near Ballarat, on 12th October. The crew comprised Messrs Vic Dinneny, manager and announcer, Bert Aldridge, engineer and operator and Bert Rennie, business manager and copywriter. These were their official titles but unofficially they were known as housemaid and cook, motor driver and mechanic, and circus hand and general labourer, respectively.

ERECTING THE AERIAL

The aerial was supported by two 40 feet (12m) steel masts placed 120 feet (36m) apart. When the aerial was erected, the caravans were manoeuvred immediately below. The whole system was then coupled by flexible cables. As far as it is known, 3YB was the first complete broadcasting station on wheels in the world. The first tour covered the Lower and Upper Mallee, as far north as Mildura and then

back to the metropolis via the Wimmera. The tour occupied a period of three months. At the end of the first six months, Max Folie took over from Bert Aldridge and Bert Rennie retired to the metropolis.

Adventure, humour and real human interest were encountered by this small band of pioneers as they heralded a new era in the broadcasting field.

The nature of the aerial system demanded open space, the type only found in paddocks, which meant that bogging in wet weather endangered the maintenance of the itinerary. After one winter, camping under appalling conditions, it became obvious that a more congenial means of carrying a broadcasting service to the country was a must.

During this period, Jack Young was busy dreaming of a broadcasting station on rails, and after many interviews with officers of the Railways Department, and overcoming many obstacles, a coach which had been built 30 years previously for use throughout Victoria of King George V and his Queen, when they visited Australia as the Duke and Duchess of York, was swung into service for the radio station.

The coach was admirably suited for its new duties. The parlour became the studio, comfortably furnished with a long settee which converted to two beds, a table, chairs, a convertible easy chair and the operating desk with double electric turntables, and a microphone pendant from above. A corridor led to the far end of the coach where a room, the dining section, housed the transmitter, cupboards and lockers contained spare tools. Between the two rooms, a kitchen was equipped with running water and all necessary cooking and storage facilities. The rear platform of the coach was equipped with a canvas weather blind covering the power plant which was used on locations where mains power

supply was not available. The aerial consisted of two 20 feet (6m) masts arranged one at each end and on opposite sides of the roof. A counterpoise system on the roof completed the system. For stability, an earth pin was driven in beside the rails when the coach was on location.

On 17th October 1932, 3YB, now a station on rails, definitely the first of its kind in the world, set out for a tour of the Goulburn Valley.

Upon arrival at its destination, the coach was backed into a siding, where it remained until called for, on schedule, in accordance with a carefully prepared itinerary covering a wide area of Victoria. In spite of the low power used by 3YB, 25 watts, the coverage was excellent.

By arrangement with the metropolitan stations, relayed items of particular interest were featured, fed over the landline from Melbourne, and coupled into the station by temporary lines provided by the ever courteous members of the Postmaster General's Department. Where power supply was available in the town, arrangements were made whereby temporary service was given, otherwise the station's own plant was used.

In 1933, Mr James Joyce, well-known in the theatrical world at that time, took over as manager/announcer and Jim Givens as engineer and operator. Jim was later relieved by George Glover VK3AG, who remained with the station until it changed over from rails to a fixed location. The story of the life of this unusual station which paved the way for a chain of fixed stations which replaced it, ended in 1935 when the mobile licence was surrendered for two fixed licences, namely Warrnambool where 3YB still carries on in the old tradition, and Warragul where 3UL profits from the pioneering spirit that brought it into being.

Some of the equipment from the mobile unit which was withdrawn from service when the fixed 3YB at Warrnambool received a higher power licence, was still operating in the amateur station of Harry Fuller VK3HF in May 1966. Harry, an engineer, succeeded George Glover at Warrnambool in 1938.

Thanks to Richard Ware, Articles Editor of Newsrail, for his permission to publish this article. Further information for members interested in trains and who may be interested in receiving Newsrail, may be obtained from the ARHS Membership Office, Box 5179AA, GPO, Melbourne, Vic. 3001. Abridged and adapted from Newsrail by Bert McLachlan.

COUNCIL OF EUROPE — TP21

A new radio station has been created at the Headquarters of the Council of Europe, in Strasbourg, France.

The call sign is TP21, this prefix serial was deleted from the French international call sign series, and officially attributed by the ITU to the Council of Europe.

The Council is an international organisation bringing together 21 democratic countries of Western Europe. It co-ordinates European activity in the political, cultural and juridical fields, it also deals with human rights problems.

The Headquarters enjoy Extraterritorial Status and are now applying for a New Country on the DXCC list, at the ARRL.

The station's director and QSL manager is F6FOK, assisted by F6EYS. Station operators are F6RNU, F6EGQ and F6HIX. Operations begin in December 1985.

Contributed by Francis Kremer F6FOK

IS THE CB LICENSED DAD? ... GEE NO DAVE!

An upsurge in illegal UHF CB operation in rural areas was coming in for attention from the Department of Communications.

A DOC spokesman said a nationwide appeal had been made for farmers to pay the \$12 licence fee or face prosecution and equipment confiscation, under the Radio Communications Act.

UHF CB is popular in rural districts, but apparently many users are neglecting to obtain a licence.



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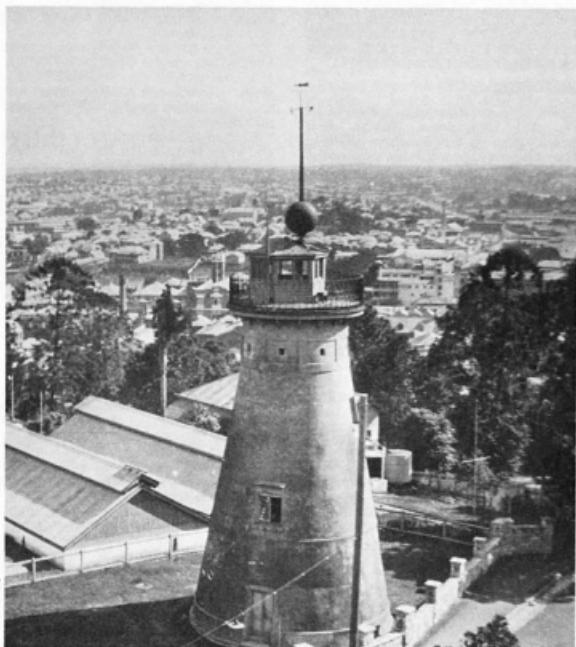
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Stan Roberts
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VK3BSR



75th Anniversary Special
VK4 WIA NOTES



Photograph by F Stevens in 1926.

Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld. 4101

The convict built Windmill and Observatory Tower. One of Brisbane's oldest landmarks and the QTH and shack of Tom Elliott 4CM. It was from here he directed Sir Charles Kingsford Smith to the Australian coast and later carried out his famous television experiments. The Tower now attracts thousands of curious visitors each year.

PRE-WORLD WAR TWO VK4 HISTORY (*abridged*)

Marconi has gone down in history as the WORLD'S FIRST AMATEUR — a title he loved to hear, particularly in his latter years. Although this is something of a misnomer, no one would begrudge it to him. Many of his wireless experiments were commercially backed and the word AMATEUR as applied to WIRELESS at the turn of the century was seldom used — the official term was EXPERIMENTER; nor was he the first person to achieve WIRE-LESS communication.

Queensland, the Sunshine State of Australia, had a few 'eccentrics' who experimented with wireless, as distinct from electricity, in 1900 — or even before this date. They must have been very few and far between, because at the outbreak of WWI, in 1914, only 10 names appeared on official lists. By the year 1930, this number had grown to 95 (give or take a few). During the next nine and a half years, to September 1939, the ranks had swelled to 275, with the ratio of city to country being approximately 50:50. WWII then intervened and when peace was restored, six years later, the number to re-register was 169 — a drastic depletion. Not all paid the supreme sacrifice, many simply had given amateur radio away for other interests. The immediate pre-war figure of 275 was not reached again until the year 1948. This meant that the war set amateur radio back, population wise, by almost 10 years.

Early in 1912, the Wireless Institute of Queensland (WIQ), was formed by S V Colville XOF. This gave the Bananalanders the distinction of being the third Australian state to form such a group.

The first VK Call Book was published by the WIV in July 1914 (AR August 1970, page 10, features a reprint) and, out of a total of 401 experimenters listed, VK4 could only manage 10, as mentioned above. However, the equipment used by at least one of these very early pioneers, viz Marcus Brimms ZQA, of Mareeba, N Qld, is still intact. The spark type station was dismantled and stored. There is no reason why it cannot be re-assembled and made to function. It appears to be the earliest station still complete in VK4 and must be one of the oldest in Australia. Shortly after the Call Book was published, experimental stations were ordered to QRT due to the outbreak of WWI and all gear was impounded by the PMG's Department.

The electronic spin off available at the cessation of hostilities gave the home-brewing experimenter many unexpected advantages. One of these was the improved quality and efficiency of the vacuum tube, which quickly led to the development of SOUND TRANSMISSIONS, ie voice and music. The first Queenslander to ably demonstrate this was Tom Elliott, who built station A4CM. His broadcasts in 1920, were transmitted from the third floor of Preston House, later named the Queensland Insurance Building, in Queen Street, Brisbane. To commemorate this achievement, a plaque describing the event was installed in the vestibule. From this location, he very successfully organised the first Outside Broadcast (OB), a stage play being performed at His Majesty's Theatre — no mean feat in those days. OBs then became a regular feature of his transmissions.

Back in 1915, for security reasons, the Royal Australian Navy (RAN) took over the control of Australia's communications from the PMG, until 1920 — two years after conflict ceased. Anecdotal stories that have surfaced from around this time indicate that both the Navy and PMG were somewhat reticent to issue 'experimental' permits to private individuals. Part of a letter written by Old Timer, Frank Carey VK2AMI, shortly before he became a Silent Key, will shed light on the official attitude:

... the VK call letters were not in use then and no 'experimental wireless' was permitted. When WWI ended, the Post Office stubbornly refused to allow any form of wireless by private owners. However, I managed, on my war record, to get Prime Minister Billy Hughes on my side, (allegedly by personal interview). The Post Office's objection, which was given as lack of secrecy in communications, was overruled. I got the call 4FC but, the Navy refused to allow me to use it away from home on account of possible 'homing' on a sea-going ship leaving our ports."

If ex-Queenslander, Frank 4FC, A4FC and VK2AMI, found it necessary to enlist the PM's aid in obtaining a licence to experiment, then it can be assumed that lesser souls had little or no hope. This official attitude surely must have retarded the progress of wireless in VK — fortunately it did not last. VK2AMI was a skilled electrical and mechanical engineer decorated by the USA for his WWI service. His name and call sign appear on the Honour Roll in the Toowoomba City Hall; his home brewed spark transmitter (circa 1917) is permanently displayed in the Brisbane Museum. This set must also be amongst the oldest functional equipment in Australia.

At this point it may be propitious to clarify the progression of call signs used in Australia since wireless began. Pre 1914, the

experimenters call sign was a three letter affair with the prefix 'X', eg XCM. After WWI this was replaced by a number assigned to each State, eg 4CM — Queensland. Then the letter 'A' (for Australia) was added, eg A4CM. As DX began to reach into other continents, Down Under was further clarified, in 1926, by the addition of the letter 'O' (for Oceania), eg OA4CM. Late in 1929, amateurs were allocated the 'VK' prefix which has remained to the present day.

In 1925, the PMG first introduced the Amateur Operators Proficiency Certificate (AOPC), later changed to AOCP — and about this time the term EXPERIMENTER began to be superseded by the less descriptive word AMATEUR.

GOLDEN DECADE

'National' MW Broadcasting, namely 4OC Brisbane and Commercial Station 4GR Toowoomba came to the Sunshine State in 1925. These events appear to have inspired the experimenting fraternity to follow suit in a big way. Research reveals a surprising number of amateur disc jockeys who 'had a ball' between the years 1925-35. The PMG then began to impose restrictions on MW transmissions and finally closed them down pre WWII. One of the best known amateurs, during this period, was Cec Morris VK4LW, who had a large listening audience. V H Wooster VK4VH of Townsville was another. His signal was heard far and wide, even to the islands north of Australia. Most clubs had a weekly broadcast service and many, using only QRP, were heard at incredible distances. It is hoped to provide much more information on this 'Golden Decade' of amateur radio DJs, in VK4, at a later date.

VHF ARRIVES

The first forays into VHF began in 1925 in Queensland. As a matter of passing academic interest, Hertz and others, investigated VHF in the 1880s — but decided the spectrum had little potential and naturally turned his genius to more profitable research. What this great man may not have fully realised was, that the shortcomings lay more in the apparatus than in the medium.

Early experimenters in VK4 faced the same dilemma; the state of the technical art was hardly up to efficient communication at VHF. In 1926, Leighton Gibson OA4AN constructed, what must have been one of the first successful five metre transmitters in Queensland, the adjective 'successful' being relative. From a look at the photograph of this rig it appears to have been the well-known, one tube Hartley oscillator. At 56MHz it must have been very unstable and subject to hand capacity when tuned. How well, or how badly, it keyed will never be known. It was displayed at a radio and electrical exhibition at Brisbane in the above year. One prophetic comment written at the time bears mention, "five metres appears useless for DX but has potential for interplanetary communication." Obviously the science fiction writers were among us way back in 1926.

In 1928, Arthur Walz OA4AW, prominent in all pre WWII activity in VK4, produced a receiver which performed creditably on VHF. It was stable enough to allow signals to be tuned with minimum difficulty. In the early 30s, with one or two reported exceptions, five metre DX was mostly restricted to a range of a few miles.

It was not until Edwin "Feedback" Armstrong's super regenerative circuit was adopted, that things began to move. This super sensitive, simple, easy-to-construct set, nicknamed the 'rush box' — because it operated with a no signal, low level, high pitched hiss — revolutionised VHF operation. For the first time ever, mobile duplex phone became a "piece of cake". Magazines from 1930 onwards began to feature regular articles on the 'RUSH BOX' transceiver — QST (USA)

in July 1931, devoted 11 pages to, what was now, a most popular activity.

As the 30s advanced, so did the VHF DX frontiers. One of the best five metre QSOs was made by Arthur Walz, VK4AW at Nundah, with Roy Harston VK4RY and Bill Wishart VK4WT at Mount Gravatt, early in 1934. Although this cross-town contact covered only 22km, the signals both ways were steady, strong and clear — a triumph for 'rush box' equipment. Shortly after this, technical instruction on regeneration became part of the WIA (Q) tuition class curriculum.

Over-the-horizon ship-to-base contact had already been made by a WIA (Q) crew using Nim Love VK4JL's ship, the SWEETHEART en route to Stradbroke Island — thus disproving, the then current theory, that VHF waves were strictly line of sight.

Early in 1935, several members of the WIA, via VK5: 4AW, 4HR, 4RY, 4AL and others achieved a long sought aim, by breaking three Australian VHF records. They were: mobile to mobile, mobile to base and base to aeroplane. Maximum distance was 112km. This DX was very quickly surpassed with QSOs from places well north of Brisbane to beyond Toowoomba, on the Darling Downs, and to Springfield near the NSW border. Again Arthur VK4AW was prominent in all of these activities. These final successes on VHF were a just reward for a dedicated group of VK4s who, initially had many failures, but stubbornly persisted investigating this part of the electromagnetic spectrum.

BUMPY ROAD TO TRAVERSE

Most post WWII amateurs would know very little about the early days of the WIA and might conclude that, since its inception in 1910, the body has progressed smoothly and steadily. Not so! As with all long surviving societies, the Institute has had its 'ups and downs' and at least one era, when it had to contend with a vigorous and fast expanding group, the Australian Radio Transmitters League (ARTL).

In March 1919, at Brisbane, an inaugural meeting was held to form the Queensland Wireless Institute, known hereafter as the QWI. Like its predecessor the WIQ, which became largely inactive during WWI, membership must have been only a handful of enthusiasts, at most. Some six years later, dissatisfaction with the Institute began to surface; the younger and more active experimenters viewed it as an ineffectual body. Frank Carey A4FC had this to say, "...the development of wireless is not due to the skills and knowledge of the academic 'big shots' ... but due to progressive ideas from just ordinary fellows from all walks of life."

Research by this author at the Oxley Library, Brisbane, has, so far, failed to reveal any high level activity by the QWI during the period leading up to the mid-20s. There are records of experimenters on the 200 metre band and some tuition in wireless — but this did not satisfy a growing number of vigorous younger experimenters, who viewed progress in a State of Queensland as being in a State of Stagnation.

This led to a well-attended meeting held in April 1927 at Tom Elliott's Radio Shop, Adelaide Street, Brisbane, where those assembled, formed a separate organisation. It was given the name of the Queensland Radio Transmitters League (QRTL). Office Bearers elected were:

President — Matt O'Brien OA4MM
Secretary — Leo Feenagh OA4LJ
Treasurer — Cliff Gold OA4CG
Working Committee — A Walz 4AW, R J Browne 4RB, C Gold 4CG and Tom Elliott (of TV fame)

These office bearers became some of the most talented experimenters, administrators



Leo Feenaghy as he is today, retired on the Gold Coast. He was the Secretary of QRTL and AR's first Editor.

and journalists that the VK4 Division has ever had.

Three months later, on 29th July 1927, the QRTL published its first newsletter 'QTC', under the editorship of L J Feenaghy OA4LJ — a foolscap sized, 12-15 page production, issued monthly, for a subscription of six shillings (60c) post free. It met with an enthusiastic reception and had to be reprinted twice, subsequently being expanded and read in several foreign countries. 'QTC', the first solely amateur wireless magazine in Australia — and the second in the British Empire — went on to become the official organ of the ARTL and eventually the WIA.

The influence of the QRTL spread rapidly and in less than 12 months there were interested groups in all States. This led to the suggestion that a National Organisation be formed under the title of the Australian Radio

Transmitters League and each State identify itself by appending its Division, eg ARTL Queensland Division. The decision as to which State would act as Federal Headquarters went by majority vote to Queensland — this came into effect in July 1928.

ARTL membership was growing rapidly all over Australia and in Queensland alone it was several times that of the QWI (reportedly 10:1). Official recognition by the PMG would put the seal of authority on the ARTL, so to this end direct representation was made. The Departmental reply was pragmatic — neither Yes or No. It preferred, if possible, to negotiate with ONE body only — but didn't specify which one.

By this time, the ARTL was in a position of strength to enable it to alter the course of Australian amateur radio history, consequent on any decisions it decided to make. On its side, the WIA had many years of official recognition behind it — but the ARTL had undisputed popularity, positive, progressive policies and an energetic group of persuasive administrators, bursting with new ideas.

QTC Magazine, Volume 2, Number 17, November 1928, ran the following editorial (extract only):

.... In Australia at the present time there are two great bodies representing the amateurs. There is the WIA, the senior body in point of date of formation, having its strongholds in Tasmania and Victoria. In the early days of its formation, the Institute rendered yeoman service to the amateur cause and not a few of the privileges we now enjoy are the result of its activities. For certain reasons, there arose, in this country, some 18 months ago, the Radio Transmitters League movement which, on account of the need for some body composed entirely of transmitters, had a phenomenally successful reception and which very soon firmly established itself in Queensland, New South Wales, Victoria and Western Australia. The stage has now been reached when it behoves the two bodies to take stock and examine the position of the amateur very carefully, with a view to joining forces for the ultimate good of the CAUSE which both sides are striving their utmost to foster.

NO WIA?

After much discussion, the FHO decided to seek a possible merger with the WIA, which had formed itself into a National body with headquarters in Victoria. Had the ARTL chosen the alternative course, at this point of time, and single mindedly pressed the PMG for recognition as THE National body representing the amateur, there might well have been no WIA today. No one can really say — it can only remain as one of those polemic moments in our history.

During the following month, December 1928, Major L J Feenaghy VK4LJ, the ARTL Secretary, journeyed to Melbourne to discuss amalgamation with the WIA Executive, represented by the President Howard Love VK3BM, Vice-President Stanley Gadson VK3SW and the Secretary Bruce Hardie VK3YX. The intense week long conference produced a rough draft of a new Australian amateur radio society. It included an amended constitution, the name Wireless Institute of Australia was to stand unchanged and QTC magazine was to become the official magazine of the Institute.

It is gratifying to report that the above negotiations were conducted in a spirit of cordiality and goodwill. However, it is unfortunate to report that VK4LJ was indisposed during this period, a fact that may have had some influence on the final draft.

All that now remained was an indication of acceptance by the Divisions in order that the

merger could be declared a 'fait accompli'. The QWI proved to be a stumbling block; it rejected the decisions taken at the December Conference. This led to a sudden surprise move by the WIA Federal Executive in Melbourne. It simply recognised the ARTL Old District as the official Old Division of the WIA. Queensland Secretary, VK4LJ, in his editorial in April 1929 issue of QTC mentioned this situation among the VK4 ARTL followers. In his turn, the WIA Federal Secretary, Bruce VK3YX said, "... Thus gentlemen, we have achieved our object — we are the WIA. A great and bloodless victory has been ours and I am able to say that no trouble is likely to be experienced from QWI and that we will experience no opposition from them in connection with the Federal Headquarters action."

In April 1929 — two years almost to the day when the QRTL was first formed — the last obstacle to an ARTL/WIA amalgamation had finally been overcome. The merger was a 'fait accompli'. The stage was now set for a united WIA to play a positive role in the Halcyon Days of the coming decade, ie 1929-39.

During this halcyon period, the private clubs that had at first flourished in VK4, began to diminish in influence, but the WIA (Q) went from strength to strength. This was primarily due to energetic and capable executive officers who established the Institute as a body of influence and respect.

Among the fraternity, the state of the art began to expand rapidly. Single tube Hartley transmitters gave way to multi-stage crystal oscillator or variable frequency oscillator controlled rigs; the superheterodyne receiver was homebrewed or bought over the counter and primitive beam antennas put in an appearance. As solar activity improved, DX and award hunting increased dramatically. Contests were staged and well supported. For the first time ever, communication wise, the world had become a global village. (See Chronology).

AND SO TO WAR

Amateur radio was never looking so good when, on 3rd September 1939, the then Prime Minister, Mr R G Menzies, informed the people that we were at war. Once again all amateur radio ceased and rigs were dismantled. Sadly, due to circumstances beyond control, many never returned to the hobby.

It is gratifying to record that Major L J Feenaghy, ex 4LJ, who played a dominant role in forming the QRTL, ARTL and negotiating the ARTL/WIA merger, is still alive and receives Amateur Radio magazine. He also produced the first VK all amateur journal, which became the first official WIA journal, viz "QTC" and he must be happy to know that it is still the official WIA (Q) newsletter.

The above material, is but an extract of VK4 history being compiled, not a complete account. Hopefully, many more events of a personal nature and general relevance will be added. Readers are invited to submit any information they have, either new or contradictory. But please include your source of information. The author is eager to hear from any Old, Old Timers who held any WIA (Q) Division Office or Council Executive position pre WWI. He is also hoping to compile an Honour Roll of all VK4s who died as a result of service in any combat zone, up to and including WWII. Please write to the author at the above address.

ACKNOWLEDGMENTS: Much of the above mentioned information was obtained from periodicals and magazines held at the Oxley Library, Brisbane. Many thanks must go to the staff for their courtesy and assistance.



QTC 1929.

CHRONOLOGY

Queensland's Amateur Radio History Prior to World War Two

Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld. 4101

1905 — The 'X' prefix allotted to all experimenters — terminated at the beginning of WWI, August 1914.

1911 — David James Garland active. Now regarded as Queensland's first experimenter. His SPARK transmissions achieved a DX of 50km.

1912 — The Wireless Institute of Queensland formed (WIQ).

1914 — Ten Queensland experimenters on official lists in the USA, 3800.

1914 — Marcus Brimms XOA, completely homebrewed a SPARK station. Dismantled, but still intact. Possibly the oldest functional, complete station in Queensland.

1917 — SPARK transmitter built by Frank Carey ex XFC, later VK2AMI. Transmitter now in the Queensland Museum.

1919 — The Queensland Wireless Institute formed (QWI).

1920 — Numerical prefixes allotted to each State, replacing the prefix 'X', eg 4CM — Qld.

1920 — Tom Elliott built Station 4CM and transmitted the first MW sound broadcast from Preston House, later the Queensland Insurance Building. A brass plaque placed in the foyer to record the event.

1921 — Bill Bright 4WB, a railway telegraphist conducted the first wireless tests between Toowoomba, Qld and Melbourne, Vic. Frequency — MW, Mode — Spark.

1921 — Tom Elliott, using station 4CM, organised the first outside broadcast from His Majesty's Theatre, in Brisbane — a three hour stage play. No mean technical feat, in those days.

1923 — The letter 'A' added to the prefix. 'A' stood for Australia, as DX was becoming international, eg A4CM — Qld.

1923 — Norm Odgers licenced as A4BO, now VK4CH. He is believed to be the longest licenced amateur in Queensland — 62 years to 1985 and still active.

1924 — Harold Hobler A4DO, in Rockhampton, received Broadcast Station KGO (USA), in daylight hours, on one valve. During this year, A4DO was placed second in Australia during the Wireless Weekly Tests.

1925 — National and commercial broadcasting began in Queensland, with stations 4QG in Brisbane and 4GR in Toowoomba. Amateurs began to follow suit.

1925 — Tom Elliott developed the ELLIOTT 3 HF receiver. Acknowledged as a superb performer.

1925 — First experimental forays into VHF.

1926 — Letter 'O' added to the prefix 'A' to further distinguish area. 'O' for Oceania, eg OA4CM — Qld.

1926 — Successful five metre transmitter built by Leighton Gibson OA4AN. Displayed at the Electrical and Radio Exhibition in Brisbane.

1926 — Radio journals and magazines began to appear commercially in Queensland. During the following decade, more than a dozen different publications were in circulation in Australia and New Zealand, at one time or another. Only a few were still functioning at the outbreak of WWII.

1926 — Hal Hobler OA4DO, worked the USA on one watt, QRP and was made a member of the Australian Rag Chewers Club, Queensland was the winner of the Trans Pacific Tests. Queensland winner of the Jewels Miles per Watt Contest.

1927 — SPARK type transmissions made illegal.

1927 — Amateur radio clubs began to be created in Queensland. During the 30s, some 24 clubs, with an estimated total membership of 1000, were active at one period or another. Only a few were still functioning at the outbreak of WWII.

1927 — Queensland Radio Transmitters League formed (QRTL).

1927 — First publication of 'QTC', the newsletter of QRTL. Editor was Leo Feenaghly OA4LJ. This was the first publication devoted entirely to the experimenter.

1927 — QRTL staged the first Radio Convention in the Commonwealth, in Brisbane.

1927 — QRTL obtained permission to handle urgent radio traffic.

1927 — QRTL gave evidence before the Royal Commission on wireless.

1927 — QRTL influenced a group in NSW to form the NSW RTL.

1927 — QRTL expanded activities and had an active representative in all States (Districts), eg Old — Fourth District.

1927 — QRTL opened QSL services for any 'OA' operator.

1927 — Leighton Gibson OA4AN and Andy Couper OA4BW, in North Queensland, handled

urgent cyclone traffic. Both praised by Mr A J Christie, Department Director of Posts and Telegraph.

1927 — V.F. Kenna OA4FK, 'Marconi' to his mates, passed the AOCP exam at 18 years. He then began a career as a trainee mechanic in the PMG, later rising to be Senior Engineer in the Radio Section of PMG Headquarters in Victoria, the highest position one could attain in this field. An outstanding Queenslander.

1928 — Australian Radio Transmitters League (ARTL) formed with a Division in all States. Queensland was voted Australian Headquarters.

1928 — ARTL, Old Div membership was several times more than that of QWI membership.

EARLY TOOWOOMBA "WIRELESS" EXPERIMENTERS

THIS PLAQUE, ERECTED IN 1965, COMMEMORATES AS A PART OF THIS CITY'S HISTORY, THE NAMES OF EARLY "WIRELESS" EXPERIMENTERS OF TOOWOOMBA WHOSE PIONEERING ACHIEVEMENTS IN THE PERIODS 1913 TO 1914, & 1920 TO 1923, ASSISTED IN LAYING THE FOUNDATIONS OF EXPERIMENTAL "WIRELESS" COMMUNICATIONS IN AUSTRALIA.

"SPARK" TRANSMISSION ERA	"VALVE" TRANSMISSION ERA
(1913-14)	(1922-23)
(1920-22)	—
W.H.H. BRIGHT	E. COOLING
F.J. CAREY AM.I.E.E.	C. FORTESCUE
J. FULCHER	E. GOLD
V. HOLMES	J. GROOM
	L. GIBSON
	E. NORRIS

ALD. J.F. McCAFFERTY
MAYOR 1965

LEST WE FORGET

BILL BRIGHT

(RAILWAY TELEGRAPHIST)

FIRST "WIRELESS TELEPHONY" TESTS
MELBOURNE - TOOWOOMBA

1921

25-1-65
PRESENTED TO THE CITY OF TOOWOOMBA
BY

FRANCIS. J. CAREY.

AM.I.E.E. (AUST.)
AN EARLY "WIRELESS TELEGRAPHY EXPERIMENTER
OF THIS CITY IN 1919

1928 — ARTL seeks official recognition from the PMG.

1928 — Five metre receiver was constructed by Arthur Walz OA4AW and performed efficiently. He was heard in freak conditions in Tasmania.

1928 — Tom Elliott, using OA4CM, provided an HF navigational fix for 'Smithy', making it possible for the completion of his record breaking trans Pacific flight. After leaving Fiji, the 'Southern Cross' ran into extremely bad weather and urgently required directional assistance.

1929 — 'VK' prefix replaced the 'OA' prefix and has remained unchanged to the present time, eg VK4CM.

1929 — ARTL and Federal WIA propose to amalgamate — official title to be WIA. 'QTC', under the editorship of Leo Feenaghy VK4LJ, became Australia's first solely amateur radio magazine, with approximately 15 foolscap pages. It was published by the Qld Division as the official organ of the WIA.

1930 — CWI objects to ARTL/WIA amalgamation. CWI's total assets 20 pounds (\$40).

1930 — Federal Executive of the WIA in Melbourne ceased to recognise CWI and accepted ARTL, Qld Div, as the official Qld Division of the WIA.

1930 — Reverend R J Delbridge VK4RJ, wins the Hutchison Cup for HF activity work.

1930 — Bill Haggerty VK4WH, using eight volts to a Model T Ford coil into a CX310, worked OA4J in Peru, South America, on QRP.

1930 — Miss Dorothy Harris VK4DH, was the first YL operator licensed in Queensland.

1930 — Frank Nolan VK4UJ, in contact with USA on 80 metres, 10 watts CW.

1931 — 'QTC' magazine ceases to exist by directive from Federal WIA, Melbourne.

1931 — G (Mac) Mackenzie VK4GK, first to receive news of Napier, NZ, earthquake from a ZL amateur. There were 500 deaths. He relayed the information to the Courier Mail in Brisbane.



1931 — J McDermott VK4JM, contacted Western Australia on 40 metres, QRP (less than one watt to a 201A receiving tube).

1932 — Roy Jonasson VK4NG, contacted ZL4DT in Balclutha on the South Island of NZ, on .40 metres 'loop' phone. Power in the aerial was .2 watt. Report was 3 x 5. During the same year VK4NG worked VK2KZ in Curri Curri, NSW on 'loop' phone. No measurable antenna current on the meter, 10 volts HT to the tube. Report 3 x 4.

1932 — Vince Jeffs VK4VJ, began experimenting with single sideband.

1932 — 'Five Point Relay' organised by the Association of Amateurs, NSW, was won by Reg Vickary VK4RV. The third place went to Arthur Walz VK4AW.

1933 — Len Grey VK4LN, was the first Queenslander amateur to fly the overseas service with

QANTAS as a pilot and wireless operator. He had to repair and self-service the gear when needed.

1933 — R Vickary VK4RV, of Cunnamulla, using 12 watts input was heard in Rockhampton on the broadcast band in daylight.

1933 — Jack Wooster VK4VH, of Townsville regularly put 204.7 metres broadcast signals into New Guinea on QRP (.50 watts), in daylight hours on Sunday mornings.

1933 — S Scott VK4BO, was QRV from Thursday Island. Was he the first VK to operate from this location?

1933 — P Whelan VK4KR, believed to be the first amateur active from Willis Island.

1933 — P (Pop) Hardgrave VK4PH, was almost an octogenarian when he obtained his amateur licence. He was then the oldest amateur in the British Empire.

1933 — Bill Chitham VK4UU, licensed. Created the famous 'U' gang.

1934 — Arthur Walz VK4AW, W Harston VK4RY and W Wishart VK4WT successfully conducted a 14 mile (22km) cross town (Brisbane) five metre QSO with strong, steady signals both ways. Best VHF results to this date.

1934 — Sunshine State conducted its first Radio Cup Contest. Winner unknown.

1934 — Queensland Division wins the Fisk National QRP Contest.



The 12 year old prodigy of the 1930s, Madeline MacKenzie VK4YL, now Mrs Pligh, photographed in 1981. Shown here proudly displaying her trophies and parts of her old vintage gear. Her decision to leave amateur radio post WWII was a big loss to the fraternity.

1935 — Madeline MacKenzie VK4YL, the youngest licenced YL operator in the British Empire. Her age — 12. Quickly, she became a competent CW contest operator with many high placings in BIER contests. WBE on 20 metres soon after she was licenced.

1935 — M O'Brien VK4MM, W Wishart VK4WT and Nim Lowe VK4LJ, successfully conducted over-horizon, ship-to-shore, five metre contacts; thus disproving the then held theory, that VHF was line of sight communication, only.

1935 — Australian five metre DX record was broken several times. Participants were Arthur Walz VK4AW, H Scholz VK4HR, B Munro VK4AL and Pat Kelly VK4KB. All were WIA members. The distance covered was approximately 174km.

1935 — Roy Belstead VK4EI, was the first Bananalander to contact Europe on 10 metres. He worked ON4AU, F8VF and D4JMK, with 20 watts input.

1935 — Alf Guilford VK4AP, won two WIA, Qld Trophies — for outstanding DX achievement and the most efficient active station. He was issued with a special QRO permit by the PMG.

1935 — E R Ashlin VK4EA, QRV on 229 metres with six watts input, was heard by two short wave listeners in New Zealand. Reports from both contained enough logged information to make them acceptable.



Two great QRP DX men. VK4RF left, and VK4EL right, making FS measurements to a vertical antenna in an effort to coax the last milliwatt of RF into space.

1935 — Harry Angel VK4HF, obtained his AOCP. Harry is still on air almost daily, held a century later at the age of 93 years. Is he Australia's oldest active amateur?

1935 — Eric Lake VK4EL, sells the rights of his 'One Valve HF Lake Special' (unofficial). A super performer.

1935 — Queensland Division wins '5 plus 5' CW Fisk Contest. Mr E T Fisk, in the broadcast station 2CH Sydney, presented the Fisk Trophy to Arthur Walz VK4AW, Queensland Divisional President, in the broadcast station 4BC Brisbane.

— Tom Elliott VK4CM, broadcast television signals on 136 metres from Observatory Tower, Brisbane. The picture transmitted was of film star, Janet Gaynor. Subsequent transmissions were received on the Darling Downs, 90 miles (144km) away.



A recent photograph of Arthur Walz VK4AW holding the Fisk Trophy, which was won by the Queensland Division in 1935.

1936 — Queensland Division again won the Fisk Contest and was declared the outright winner of the Trophy. The Fisk Trophy Contest was a forerunner of the REMEMBRANCE DAY CONTEST.

1936 — Vi Nolan VK4LO, the YF of Frank VK4JJ, is said to have completely homebrewed her own rig, down to the component parts, including winding power transformers. Quite an ex-YL. Also claimed contacts with 20 000 USA stations up to the period of WWII.

1936 — Eric Lake VK4EL, made WAC on 20 metres CW with less than half a watt, into a vertical antenna and claimed overseas as a QRP world record at that time. VK4EL, was the official WIA and private Morse code instructor to all and

FINE ACHIEVEMENT IN AMATEUR RADIO

10 Metre Communication Between Queensland and Europe

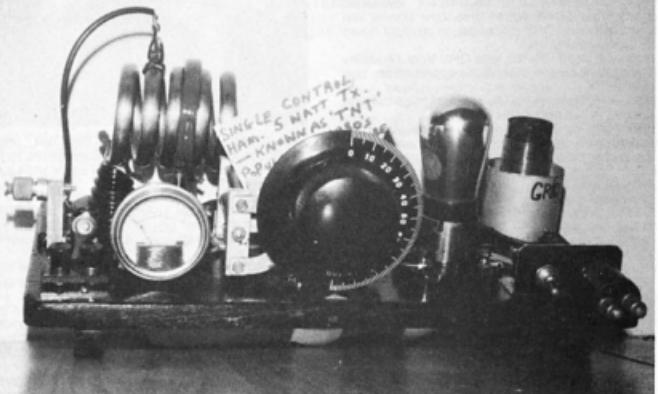
For seven years it has been the ambition of Australian amateur wireless men to establish two-way radio contact with European amateurs on the 10 metre band, and to a Queenslander has fallen the honour of having done so. The successful amateur is Mr. Roy Belstead, of Townsville, who last Sunday night worked with ON4AU (Belgium), F8YF (France), DK4PJ (Germany) and DJ4MK (Germany).

On previous occasions OHTNC (Belgium) has reported having heard VK4EI (Mr. Belstead's station), and 4EI has heard European amateurs but last Sunday night was the first time he was able to establish two-way contact.

In amateur circles this is regarded as a noteworthy achievement and VK4's are particularly pleased that it was a Queenslander who has made fresh history on the 10 metre band. The successful contact has stimulated interest in the efforts to link up with European amateurs, and reports from abroad state that the Europeans are keeping a lookout every night for VK stations.

Another interesting report is that, for the second time in the history of 10 metre experimental transmissions, an Australian has established two-way communication with a South African.

An excerpt from the Brisbane Telegraph — 8th October 1935.



The famous Work-the-World TNT Circuit, one tube, five watt transmitter, circa 1930. The usual form of modulation was LOOP — a single loop around the tank coil, connected to a PMG carbon microphone. Some operators used a glove to prevent RF burns and avoided lip contact.

sundry. In his latter capacity, the fee was six pence (5 cents) per hour, or free if beyond the ability to pay.

1936 — Harold Hobler VK4DO, created WAC in a world record time of 50 minutes, on QRP.

1936 — G MacKenzie VK4GK, worked the first WAC on 10 metres AM phone.

1935 — Fred Lubach VK4RF makes WAS (USA) in 100 days on 20 metres CW. VK4RF also worked DXCC in less than 12 months on QRP during this year.

1937 — G MacKenzie VK4GK, awarded 10 metre CW WBE by BERU.

1938 — Chas Miller VK4CM, now VK4QM, achieved first place in the VK/ZL CW Contest. Bob Beaton VK4BB, of Maryborough, was placed first in the Junior A1 section.

1939 — Frank Nolan VK4JU, participates in the, now famous, all continent round table 20 metre AM phone event. Other participants were VK3KU, VK3DH, VU2CQ, G8ML, W4DLH and stations in Egypt and South America, whose call signs are unknown. Reported in the USA and Europe and recorded by VK3DH.

1939 — Frank Shannon VK4SN, won the WIA Queensland Divisional Pennant for DX achievement on QRP.

1939 — VK4SA, now VK4SS, handles an emergency from cyclone devastated, Solomon Islands. In the same year, VK4SA contacted G8KP, a prefix 'first' for both. After 40 years, they 'eyeballed' for the first time and swapped the first QSL cards sent to each other, pre WW II. AR



Alan Shawsmith VK4SS.

PROFILE OF THOMAS M B ELLIOTT

Thomas M B Elliott, early wireless and television pioneer, is credited with the following 'firsts'. He was the first radio voice in broadcasting in 1919, built the first sound broadcasting station, 4CM in Queensland in 1920, was the only amateur to contact and assist aviator, Sir Charles Kingsford Smith in 1928 and was the first to regularly transmit television pictures in 1935.

It would seem, fate is largely indifferent to the struggles of man, and bestows her whims as she deems fit. There was nothing in the early years of Tom Elliott's life to indicate that he was a man destined to become a legend in his own lifetime.

Born in Queensland in 1899, Tom was one of a fairly large, but not affluent family. Nevertheless, his parents provided him with a good basic education. In 1916, at the age of 17, he secured a position as a Wireless Operator (Sparks) with the ORIENT Line. How he obtained the technical knowledge for this position is not known, however he would have been quick to acquire the skills.

Tom left the sea in 1919 and participated in building the broadcast station that was the forerunner of 2BL. Anecdotal information says that from there he made the first voice broadcast. A recording of this is said to be in the National Museum, Canberra.

In 1920, he returned to Queensland and, during this year, constructed and put on air, broadcast station 4CM. This was a full five years before National and Commercial Broadcasting began in the Sunshine State. The listening public was restricted to reception by the ubiquitous crystal set. Very few had valve receivers. Unofficial reports of 4CM's transmission indicate it was heard at a distance of 2000km. A large plaque in the vestibule of the Queensland Credit Union Centre building, then Preston House, in Queen Street, Brisbane, testifies to this achievement. The wording is thus:

"Sound Broadcasting Originated in Queensland from this Building. Transmission Commenced in 1920 and continued to 1923 under the Auspices of Dr V MacDowall. The Installation was Designed and Operated by Thomas M B Elliott".

Tom's next venture was a very successful outside broadcast (OB) of 'Aladdin's Pantomime' from His Majesty's Theatre, Brisbane. No mean feat in those days when, music and other effects had to be picked up acoustically. Again, this broadcast was the first of its kind in Queensland — and in Australia — conducted by a purely experimental station. These OBs became regular features, many being relayed from the Exhibition Hall. A well received speech, by the then Premier of Queensland, Mr E G Theodore, broadcast in 1924, finally created an awareness in political minds of the potential of broadcasting, and acted as a catalyst to the creation of station 4QG, Brisbane, which came on air in 1925.

The station A4CM at Preston House was dismantled and, for a period in the mid 20s, Tom ventured into radio retailing, setting up a 'Wireless Centre' in Adelaide Street, Brisbane. At these premises, in April 1927, the inaugural meeting of the QRTL, forerunner of the powerful ARTL, was held. Tom was elected to an executive position.

By 1928, the experimental station OA4CM had been rebuilt in the Old Windmill Tower, on

Wickham Terrace. Not only was this place ideal for radio and TV experiments, it also had a great historical background. From here, on the morning of 9th June 1928, Tom Elliott wrote himself into the pages of both wireless and aviation history books. Through the QRN on approximately 35 metres, he heard the call KHB from the transmitter aboard the aeroplane SOUTHERN CROSS, in which Sir Charles Kingsford Smith (Smithy), who was attempting to fly the Pacific. Contact was made and a message received by Tom, asking for navigational directions and the provision of a



A photocopy of a card confirming a QSO with A2BC from Preston House in 1925. Power was six watts into an antenna 100 feet (30m) high.

Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld, 4101

'fix' so that landfall may be reached as quickly as possible, before the fuel supply was depleted.

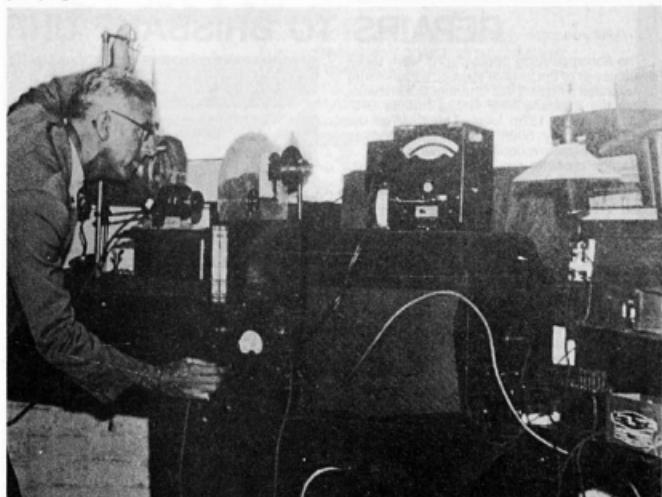
The 'off course' predicament that 'Smithy' was best described in this extract, taken from Australia's Heritage, Volume 5, page 1895, published by Hamlyn.

"...on the afternoon of Friday 8th June, the Southern Cross left Suva on what was to prove the worst part of the trip. Four hours later, the plane ran into storms, which Ulm described as 'the worst he had ever encountered.'

"Three times now, great sheets of lightning have flashed across our path and each time it had been accompanied by terrific roars of thunder."

"For the next three hours, the plane was thrown all over the sky and at times it took the combined strength of Smith and Ulm on the controls to drag the Southern Cross back on to an even keel. Throughout the night the storms raged and Smith was forced to fly blind for hours on end, relying solely on his instruments, rather than his instinct, to tell him whether the aircraft was level, rising or climbing. At 7.30am on Saturday, 9th June, Warner received the first radio message from Australia and Smithy turned the aircraft to the west. Two hours later, they crossed the Australian coastline, to discover they were, in fact, about 100 miles south of their proposed Brisbane landing field....."

The station referred to was OA4CM and Smithy's Wireless Operator Warner asked Tom to keep the key of his transmitter closed, so that a navigational 'fix', on which to fly, could be established. In attempting to comply, Tom also ran into difficulties which are best told in



Tom's early Television Equipment.

his own words — "... it was necessary to use full power to maintain contact. As the rig wasn't built to operate key down at this input, the PA tube plate was soon cherry red, in spite of a fan blowing cold winter air on it. I knew that if the valve blew, all might be lost, (apparently Tom had no spare) so I had to regularly break the transmission. For over an hour my gaze was glued to the tube — would it last the distance? Fortunately it did, until contact was lost due to short skip; but Smithy was now near the coast and crossed it about 90 miles south of Brisbane. Not bad, considering he was flying in the wrong direction when contact was first made...."



Tom 4CM (right) and friend Jim Munro taking the air from the verandah of the Grand Hotel, Southport (now demolished).

One of the crew of the Southern Cross (The Bus), speaking publicly shortly afterwards, made a brief, but pertinent comment on the flight from Fiji. He said, "... no one will ever know if we would have made it without the timely assistance of Tom Elliott operating station OA4CM..."

Perhaps Warner has a better idea than most. Thirty years later, when visiting Australia, he paid Tom a congratulatory visit and signed his log book.

In 1935, VK4CM achieved yet another first. Television pictures were transmitted from the

Windmill Tower on approximately 130 metres and received clearly in Ipswich, 40km away, and later on the Darling Downs, 140km distant. An extract from a plaque erected on the tower reads,

"An experimental television station was established in the Windmill in 1935 by Dr Val MacDowall and Thomas M B Elliott. The first actual television transmission in Queensland was broadcast from this Tower."

These first transmissions were made by means of a mechanical drum. At the outbreak of WWII, his transmissions were an all electronic affair on approximately 200MHz and 180 lines. Tom Elliott was a superb homebrewer,



Tom relaxing with a friend on the waters of Moreton Bay in 1946.

able to construct almost anything to meet his individual needs, including large vacuum tubes specially suited to his television experiments. By instinct, he was a true experimenter, willing to "cut and try" any project a dozen times until satisfied — then his inquiring mind instantly moved ahead to meet the next immediate challenge.

Readers may be curious to know just what type of man Tom Elliott was, outside radio and television — a man who had spent so many years in research burning the midnight oil. While living in the Tower, pre WWII, he was regarded by some as a recluse — in truth, he was so preoccupied by the tasks in hand, he came to resent being disturbed by curious visitors. At the same time, he was in business, retailing X-ray equipment from a nearby office in Ballow Chambers. To eyeball him was a

pleasant surprise, his early education was evident in both his manner and speech. No trace of dull or distant academia touched him — in fact he rather exuded the playboy image. Tom enjoyed nothing better than a session with the boys, where his talents as a witty raconteur had full scope and many a convivial glass was raised in the process. His friends were legion and from all walks of life.

Personal material possessions seemed to have little attraction for him. When, in deference to his advancing years, he was asked to write his memoirs, he replied,

"There are two large plaques erected in my honour — one at the Tower, the other in Queen Street — they will tell anyone interested in Mr T Elliott all they need to know."

Such was the simple, but great nature of the man. Thousands of passerbys and tourists now view these plaques each year.

In 1965, Tom was made an Honorary Fellow of the University of Queensland and soon after this, the Royal Historical Society of Queensland bestowed its Fellowship upon him.

There is no record that he ever obtained his AOCP. The call signs used, viz 4CM, A4CM, OA4CM, VK4CM belonged to the late Dr Val MacDowall, who became Tom's mentor, early in his career. They worked together for a time in the profession of radiography. After the doctor's death, the call VK4CM was allotted to another great DXer, Charlie Miller, ex VK4US, ex VK2ADE. In the mid 60s, at the suggestion of the PMG, Charlie gladly returned the call to Tom as a mark of respect for the man's achievements. It appears also, Tom was never a member of the WIA.

Tom Elliott died at Redcliffe, Queensland, on 31st July 1971, aged 72 years.

To honour the memory of this true pioneer, the SEQATV Group held a commemorative reunion (50 years since the first transmission), at the site of his famous experiments, the Old Windmill Tower, Wickham Terrace, Brisbane, on 6th October 1985.

AUTHORS NOTE: No attempt has been made to describe and explain the technical experiments conducted in the Tower. These were long, involved and difficult, and a story for another time. I am indebted to a lifelong friend of Tom's, viz Jim Munro of Clermont, for much of the above information.

AR

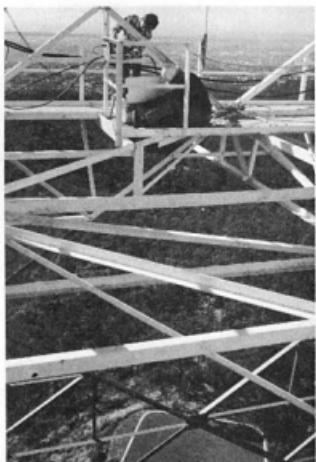
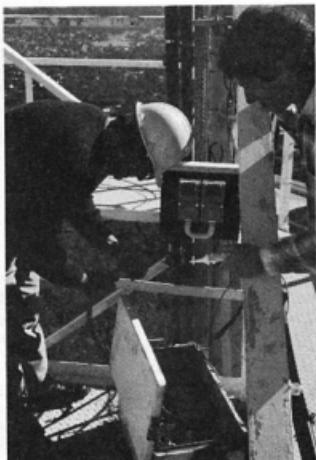
REPAIRS TO BRISBANE UHF REPEATER

The accompanying photographs were taken on the tower of the largest six metre transmitter in Australia! This is TVQ Channel 0, Brisbane, where the Brisbane VHF Group has its UHF repeater, at the 137m level. The base of the tower is roughly 300m above sea level on Mount Coot-tha, overlooking Brisbane. For four years, the repeater has operated from an old metal car frigide (Esky). But recently it has been a little erratic. On a repeater day recently, Paul Mead VK4ZEM, Nev Potts VK4KNP and Don Marshall VK4AMA climbed to the level to find the problem — the box had collapsed through corrosion, corrosion caused by weather on the 240V plug (rain and mist blow upwards at that level), plus a little electronics.

The equipment was carried down the tower in haversacks and it is now being revamped. The unit will possibly be changed to micro control and after testing in the city, will be installed in a new box at the same place on the tower, provided a solution can be found as to how to get the box up the tower.

The tower is a maze of a variety of aerials up to SHF dishes, but the Group were able to report their progress, via a UHF handheld, to other Group members on terra-firma below, despite RFI. On a good, clear day visibility is around the 80-100km range.

Contribution and photographs courtesy Don Marshall VK4AMA AR



KENWOOD SUMMER SALE!



TS-940S

The TS-940S is a competition class HF transceiver having every conceivable feature, and is designed for SSB, CW, AM, FM and FSK modes of operation on all 160 through 10 meter Amateur bands, including the new WARC bands. It incorporates an outstanding 150 kHz to 30 MHz general coverage receiver having a superior dynamic range (102 dB typical on 20 meters, 50 kHz spacing, 500Hz CW bandwidth).

THE FREQUENCY BAND PROGRAMMING OF THIS UNIT IS NOT DEPENDENT ON A BATTERY. SOME BRANDS MUST BE RETURNED TO THE IMPORTER FOR REPROGRAMMING SHOULD THE BATTERY BE DISCHARGED.

TS-430S



The TS-430S combines the ultimate in compact styling with its counterparts in advanced circuit design and performance. An all solid-state SSB, CW and AM transceiver, with FM optional, covering the 160 — 10 meter Amateur bands including the new WARC bands, this remarkable radio also incorporates a 150 kHz — 30 MHz general coverage receiver having an extra wide dynamic range.



TS-130SE

The TS-130 SE Series is an incredibly compact, full-featured reasonably priced, all solid-state HF SSB/CW transceiver for both mobile and fixed operation. It covers 3.5 — 29.7 MHz (including the three new Amateur bands) and is loaded with optimum operating features.



TS-530SP

The TS-530SP HF transceiver is designed in accordance with KENWOOD's latest, most advanced circuit technology, providing wide dynamic range, high sensitivity, very sharp selectivity with selectable filters and IF shift, NOTCH filter, built-in digital display, speech processor, and other features for optimum, yet economical, operation on 160 through 10 meters.



TS-830S

The TS-830S is a high-performance, HF SSB/CW transceiver with every conceivable operating feature built in for 160 through 10 meters (including the three new bands). The TS-830S combines a high dynamic range with variable bandwidth tuning, IF shift and an IF notch filter, as well as very sharp filters in the 455 kHz second IF.

KENWOOD SUMMER SALE!



TM-211A

The TM-211A 2-m FM mobile transceivers has been designed to be the ultimate in compact size and lightweight, and feature a front panel that can be tilted in relation to the main body of the radio, allowing maximum flexibility in automotive installations. The use of the latest in technology is exemplified in the incorporation of KENWOOD's new DCS (Digital Code Squelch) circuit that provides the operator with a capability to program his radio to respond only to transmissions from stations whose radios transmit a preselected digital code. Additional convenient operating features include a powerful 25 watts of RF output, dual digital VFO's built-in, priority watch, memory scan and programmable band scan, audible "beeper" to confirm operations, microphone test function, repeater offset switch, reverse switch, and high performance receive/transmit specifications.

DCS

TR-7950



TR-9130



KENWOOD, in its new TR-7950 2 meter FM mobile transceiver, introduces a completely new concept of versatility and performance in 2 meter operations. Among the more important convenience features providing enhanced ease of operation is a new, large, easy-to-read (direct sunlight or dark) LCD display, 21 new multi-function memory channels that store such information as frequency, offset, and sub-tone channel data (sub-tone unit optional) with a hefty 45 watt output power in the TR-7950, and the use of microprocessor technology throughout. Other important features include auto-offset, programmable priority, memory, and band scans, automatic center-stop tuning in scan modes with center tuning indicator, built-in lithium battery memory back-up, and a built-in 16 key autopatch. Both models are identical, except for power output.

The TR-9130 is a powerful, yet compact, 25 watt FM/USB/LSB/CW transceiver. Available with a 16-key autopatch UP/DOWN microphone (MC-46), or a basic UP/DOWN microphone.

FEATURES

- 25 watt RF output power on FM/SSB/CW • FM/USB/LSB/CW all mode operation • Six memories • Internal battery memory back-up (battery not supplied) • Memory SCAN • Automatic band scan (1 MHz segments) • Hand microphone with UP/DOWN switch • Squelch circuit on all modes (FM/SSB/CW) • Repeater reverse switch • Tone switch • Tuning transmit frequency for OSCAR operations • Built-in CW semi break-in with side tone • Digital display with green LED's • Dual digital VFO's • High performance receive-transmit characteristics • Compact design and light weight • Transmit OFFSET switch • High performance noise blander • RF gain control • RIT circuit • AGC time constant automatically selected • HIGH/LOW power switch • Accessory terminal (rear panel) • Piezoelectric beeper • Visual indicators • Quick release mounting bracket • Extended frequency coverage 143.900-148.999 MHz (Region 2/3 version)

KENWOOD SUMMER SALE!



TH-21A



TR-2600A

DIGITAL CODE SQUELCH

TRIO-KENWOOD's new DCS "Digital Code Squelch" is a revolutionary signalling concept for Amateur Radio that utilizes current state-of-the-art technology. This new technology is a major feature of the new TR-2600A, TR-3600A "2-m and 70-cm FM Handheld Transceivers", the TM-211A, TM-411A "2-m and 70-cm FM Mobile Transceivers", and the TS-711A, TS-811A "2-m and 70-cm All-mode Transceivers". The DCS should not be confused with conventional CTCS (Continuous Tone Coded Squelch System). DCS uses a 5 digit, digitally coded data string, to open squelch on a receiver that has been programmed to accept this same specific code group. By utilizing a 5 digit code group the operator may choose from 100,000 possible combinations, thus providing increased security. In addition to the 5 digit "access code" the DCS also transmits the operators call sign, in decimal ASCII code. Call signs of a maximum of 6 digits may be entered. By using the optional CD-10 Call Sign Display, the operator may store incoming call signs, for later review or logging.

100,000 different 5 digit code groups. Convenient keyboard entry of the "access code" is possible with all models equipped with the DCS.

Capable of monitoring multiple access codes. The DCS codes, and call sign data, are stored in separate memory locations within the host unit. This allows the operator to monitor several access code groups at one time. Clubs and nets will find this function useful, as will operators who wish to listen for more than one group at a time.

CD-10

The CD-10 stores the call sign of calling station in its memory and displays it on an LCD display. Call signs of up to 20 of the most recently calling stations are stored, allowing the operator to quickly check for and return any call.

DCS Decoding. Decodes the digital ASCII call sign data that is a portion of the DCS data string.



Automatic Call Sign Transmission. A 6 digit Amateur "Call Sign" is entered into the DCS memory using decimal ASCII coding, by use of the front panel keyboard. This call sign is then transmitted in conjunction with the DCS data string each time the PTT switch is depressed or released. By using the optional CD-10 Call Sign Display the operator can automatically store up to 20 different call signs. This feature is useful for unattended monitoring of the radio. Upon return to the station the operator can review the CD-10 memory to determine who tried to contact him during his absence. This function is also useful for logging purposes.



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KENWOOD

SUMMER SALE!



TS-711A

The TS-711A 2-m and the TS-811A 70-cm all-mode transceivers feature enhanced ease of operation through the use of new microprocessor technology that permits the incorporation of the widest range of innovative features in a very compact package. These features include KENWOOD's new, exclusive DCS (Digital Code Squelch), 10-Hz step dual digital VFO's, a new, multi-function fluorescent tube digital display, 40 multi-function memory channels, programmable band scan, memory scan, mode scan, auto mode function, "quick-step" main tuning dial, IF shift, speech processor, all-mode squelch, noise blanker and an easy-to-operate front panel design.

FEATURES: COMPACT, LIGHTWEIGHT DESIGN, FULL 20 MHz COVERAGE (TS-811A: 430 - 450 MHz). With nearly every conceivable feature and a built-in AC power supply, the TS-711A and TS-811A measure only 270 (10.6) W x 96 (3.78) H x 260 (10.2) D, mm (inch), and weigh only 7.1 kg., (15.65 lbs., approx.), facilitating use as either a mobile or base station.

TS-811A



TW-4000A

An "FM Dual-Bander", the KENWOOD TW-4000A provides new versatility in VHF and UHF operations, uniquely combining 2-m and 70-cm FM functions in a single compact package.

FEATURES:

- 2-m and 70-cm FM in a compact package
- Large, easy-to-read LCD display
- 25 watts RF power on 2-m and 70-cm bands
- Programmable memory scans
- Priority watch function
- Common channel scan
- Built-in antenna tuner/transmitter
- Optional VS-1 "Voice Synthesizer Unit"
- 10 memories with offset recall and lithium battery back-up
- Band scan in selected 1 MHz segments
- Dual digital VFO's
- New multi-function Handheld Microphone (Remote 1 only). Remote 2, 3 normal UP/DOWN microphone
- Repeater reverse switch
- Front panel illumination
- Rugged diecast chassis
- "Beeper" circuit, with radio alarm function
- Sealed front panel connectors for 2-m and 70-cm
- Easy-to-install, adjustable-angle mobile mount
- Extended frequency coverage 142,000 - 149,000 MHz.

TS-670



The TS-670 "Quad-Bander" is a unique all-mode transceiver that covers the 6 meter VHF band, and the 10, 15 and 40 meter HF bands, combining the ultimate in compact size with advanced circuit design and performance. This outstanding radio may be purchased with an optional general coverage receiver that tunes continuously from 500-kHz to 30-MHz. Key features include dual digital VFO's, 80 memory channels, memory scan, programmable band scan, function direct key selection, a two-colour fluorescent tube display with function indicator LED's, IF shift and squelch.

KENWOOD SUMMER SALE!



TM-411A

The TM-411A 70-cm FM mobile transceivers has been designed to be the ultimate in compact size and lightweight, and feature a front panel that can be tilted in relation to the main body of the radio, allowing maximum flexibility in automotive installations. The use of the latest in technology is exemplified in the incorporation of KENWOOD's new DCS (Digital Code Squelch) circuit that provides the operator with a capability to program his radio to respond only to transmissions from stations whose radios transmit a preselected digital code. Additional convenient operating features include a powerful 25 watts of RF output, dual digital VFO's built-in, priority watch, memory scan and programmable band scan, audible "beeper" to confirm operations, microphone test function, repeater offset switch, reverse switch, and high performance receive/transmit specifications.

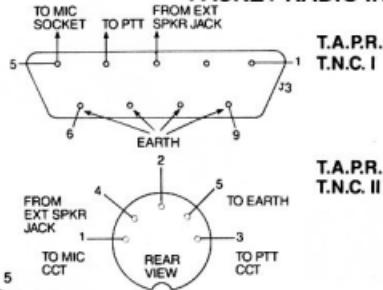
TR-9500



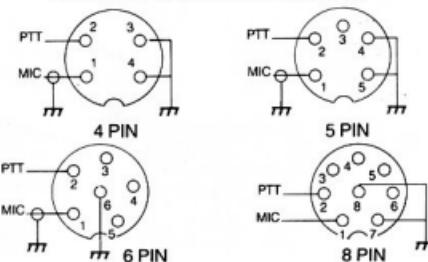
The TR-9500 is a compact 70-cm USB/LSB/CW/FM transceiver providing increased versatility of operation on the UHF bands. It features dual digital VFO's six memory channels, memory scan, automatic band scan, SSB/CW search, high performance receive and transmit, and a host of other features. It should be especially appealing to the OSCAR or 70-cm SSB/CW operator.

**SEE SANTA'S SUPA-SCOOP
SPECIAL PRICE ON PAGE 8**
(AVAILABLE ONLY FROM
TRIO-KENWOOD HEAD OFFICE)

PACKET RADIO INTERCONNECTION DATA



KENWOOD TRANSCEIVER MIC DATA



KENWOOD SUMMER SALE!

R-2000



R-2000
COMMUNICATIONS
RECEIVER — World's
leading all mode
receiver. Receives 150
kHz to 30 MHz.

The R-2000 is an innovative all-mode SSB, CW, AM, FM receiver that covers 150 kHz — 30 MHz. New microprocessor controlled operating features and an "UP" conversion PLL circuit assure maximum flexibility and ease of operation. Key features include digital

VFO's, ten memories that store frequency, band and mode information, memory scan, programmable band scan, digital display and 24 hour dual clock with timer, plus a host of other features to enhance the excitement of listening to stations around the world.

R-600



The R-600 is a high performance general coverage communications receiver covering 150 kHz to 30 MHz in 30 bands. Use of PLL synthesized circuitry provides highly accurate frequency control with maximum ease of operation. Use of the latest technology assures the ultimate in short wave listening enjoyment on all covered frequencies, whether using AM, SSB or CW modes of operation. The compact size of the R-600 allows the user the maximum flexibility in placement of the radio, and the front mounted speakers permits the radio to be located between shelves without degradation of audio quality.

AUTOMATIC ANTENNA TUNER

The AT-250 is an automatic antenna tuner designed to match the TS-430S in size, colour and appearance. It may also be used with other HF transceivers such as the TS-130 series, the TS-530S, TS-830S and the TS-930S.

ANTENNA TUNER

The AT-230 antenna tuner includes the new three bands and function features such as a through-line wattmeter, SWR meter and antenna selector switch. The AT-230 adds greatly to the effectiveness of your station.

ANTENNA TUNER

The AT-130 is a compact and lightweight antenna tuner designed for base or mobile use. (Includes the new three bands). It consists of an antenna coupler, an SWR meter and an antenna switch.



KENWOOD

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SW-100 A/B

SWR/POWER METER

Compact and lightweight SWR/POWER/VOLT meters cover 1.8 — 150 MHz (SW-100A), 140 — 450 MHz (SW-100B) in range of 150 W full scale for mobile use.

SW-200 A/B SW-2000



SWR/POWER METER (Supplied With A Coupler)

SW-200A supplied with SWC-1, SW-200B supplied with SWC-2, SW-2000 supplied with SWC-3. Selectable peak-reading/RMS. SWR/POWER meters cover 1.8 — 150 MHz (SW-200A), 140 — 450 MHz (SW-200B), 1.8 — 54 MHz (SW-2000) in range of 0 — 20/200 W (SW-200A/B), 0 — 200/2000 W (SW-2000) full scale for base station use.

LF-30A



LOW-PASS FILTER
Specifications • Cutoff frequency: 30 MHz • Insertion loss: More than 80 dB between 90 and 300 MHz • Durability against input power: 1 kW PEP • Insertion loss: 30 dB at 300 MHz • Input/output impedance: 50 ohms • Dimensions: 244 (9.6) W x 59 (1.97) H x 1575 D mm (inch) • Weight: Less than 500 g (1.2 lbs.)

AL-1/2

LIGHTNING & STATIC PROTECTOR

AL-1: Handles 100 W output at 50 ohm with SO-239 Connector.
AL-2: Handles 1 kW output at 50 ohm with SO-239 Connector.

MC-60A

MC-60A (8 Pin)
Deluxe Desk-Top Microphone With Built-In Pre-Amplifier

The zinc die-cast base provides high stability, and the MC-60A is controlled by UP/DOWN and LOCK switches, UP/DOWN switches, an impedance selector switch and a built-in pre-amplifier.

MC-80

MC-80 (8 Pin)
Desk-Top UP/DOWN Microphone With Built-In Pre-Amplifier

The MC-80 is an omnidirectional electret condenser microphone provided with UP/DOWN switch, volume adjustment for output level, PTT and LOCK switch, and built-in pre-amplifier.

MC-85

MC-85 (8 Pin)
Multi-Function Desk-Top UP/DOWN Microphone With Built-In Audio Level Compensation

The MC-85 is an unidirectional high-class electret condenser microphone provided with the following features: volume, audio level compensation circuit, low cut filter, level meter, PTT and LOCK switch.



MC-55

MOBILE MICROPHONE (6 Pin or 8 Pin)
The MC-55 provides UP/DOWN switch, LED display for switching transmit or receive, adjustable microphone gain, automatic receive returning circuit (approx. 5 minutes) and many functions.

SM-220

STATION MONITOR
Suitable for use with the TS-530SP, TS-830S and the TS-940S. Direct connections. Based on a wide-frequency-range oscilloscope (up to 10 MHz), the Model SM-220 station monitor features, in combination with a built-in two-tone generator, a wide variety of waveform-observing capabilities.





KENWOOD SANTA SUPA - SCOOPS

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 E-80 80M Coil
for MA-5.

\$5
HA-3

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TR-9500

 TR-9500 70cm All Mode
Transceiver (see page 5 for details).

\$625
FC-10

 FC-10 Remote Control for
TM-201/401. Usually \$65.

~~\$65~~
\$15
SC-4L

 SC-4L Leather Case
for TR-2400.
Usually \$25.

~~\$25~~
\$10
BO-9

 BO-9 Base Mount and
back up supply for TR-9000
and TR-9500. Usually \$40.

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ST-1

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for TR-2400.
Usually \$80.

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SC-3

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KB-1

 KB-1 Spinner Knob
for TS-530/830.
Usually \$20.

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9\$

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The past and future of amateur radio, as I see it!

Dennis Breitkreutz

14 Birmingham Street, Alderley, Qld. 4051

My experience with amateur radio goes back to around 1952, when I started as a shortwave listener in the days of audio modulation, using ex-WWII vintage receivers purchased from disposals stores. To name but a few, there were AR68s, AR8s, RT155s, Kingsley AR7s and HROS.

The task was to convert these receivers for amateur use. First, it was necessary to make a power supply, so they could be operated from the 240V mains power. Next, the selectivity and sensitivity had to be improved. Information about these changes was published in Amateur Radio and Army conversion manuals. Amateurs of the day were a fussy lot, you know!

I knew some licenced amateurs at that time and we became close friends. These amateurs were very knowledgeable men when it came to amateur radio, but to ask them what a SWR meter was, they would say they had never seen one, never used one and that was that. I have watched them check their transmission lines, etc by holding a fluorescent tube in their hands and moving it along the open line feeder. As far as I was concerned, I didn't worry about these fancy goods, I used a long wire antenna and was satisfied with it.

At that time it was not necessary to have a SWL licence, but it was necessary to have a broadcast receiver licence, which was issued by the PMG's Department.

A very reasonably price unit some years ago, was the Geloso VFO. This sold for around 17 pounds (\$34) and with a key and power supply, plus licence you could be operational on the amateur CW bands. For phone, a driver p/o stage, public address amplifier and microphone was needed. But don't forget the aerial!

In those days, amateurs had to construct their own gear, frequently with the help of other amateurs, who had been there and done that. I constructed a VFO using a 5Y3 rectifier, 6J7 stage, public address amplifier and microphone was needed. But don't forget the aerial!

Not far from my QTH there was an electronic enthusiast, who was known as the "Colonel". When he fired up his transmitter, with two 'lighthouse tubes' in the final stage, which shot two kilowatts into the aerial. He was so strong, I was able to read him strength 9 with our electric 'stove'.

Another amateur friend was very cunning. In those days, it was necessary to have a Class C Wave Meter in the shack, by law, to check the transmit frequency. But amateurs were checking their transmitting frequency with a calibrated receiver or crystal calibrator instead. This amateur didn't have a wave meter but he had a box with dials and knobs which looked like one.

One particular day, he had a call from a radio inspector who was doing 'spot checks'. He looked around the shack and did some voltage checks on the terminals at the back of the transmitter. All checked okay. He then pointed to the 'wave meter imitation' and asked if it worked. The amateur said, "Like a beauty". The RII then left and my friend took the covers off his meter to show me the naked interior.

I did a lot of constructing, got it operational and then would sell it. I made things on breadboards, changing components until it worked. There were no such things as transistors, so these things were built around HT power supplies. There was a lot of trial and error involved, and I never knew what the

finished product would look like.

We all took pride in our equipment, too. When I sold my AR7 receiver, the buyer asked if it was selective? I said that, with 455kHz crystal phasing, it would change a duet into a solo. I made the sale.

Around the late 1950s, amateur radio received a shot in the arm with the introduction of SSB and transistors. It was then, head down, tail up to learn how these new-fangled things worked. With this new mode it was necessary to improve selectivity by making O multipliers. BFOs were no problem as most ex Army equipment had them built in, for CW reception. Working with transistors was a breeze — no high voltage to worry about, a big reduction in size and above all, much cheaper. There were no PCBs so all wiring was point to point, as had been with the valve equipment.

Using this method, it was difficult to build two pieces of equipment the same, however, with PCBs this was a thing of the past.

Amateur radio moved rapidly in the mid-60s with the arrival of ICs and amateur transceivers.

Over the years, I've been a railwayman by day and an electronics engineer by night, and I think this is what amateur radio is all about.

Now how did I get interested, in the first place? I can remember going to Radio Equipment Junk Sales in the early 50s and buying some funny looking pieces, cheaply. I would then take it to the local radio shop to attempt to find out what it was. They wouldn't know and would send me off to the local 'ham'. He lived close to me, we became friends and I was hooked.

Radio clubs of today could learn a little from the past, to bring new people to this worthwhile hobby. It is not so important to run club displays and write pamphlets but more to get people involved. Start with the youngsters. Encourage schools to have hobby classes as part of their programme.

What hampered me from taking out an amateur licence in those days, was the 14WPM Morse code. I could have taken out a limited call but this was of no interest to me. I didn't know of any AOCP classes and as far as I knew, the only book on amateur radio was the ARRL Handbook. It was basically necessary to listen to CW on air, at about 20WPM. Many amateurs overcame the problems with Morse, but I just didn't like it.

I finally sat the Novice exam, and received the call VK4NMK, in May 1978 and 12 months later the limited call VK4ZEW. By this time, when I went to air, I didn't have to make or convert anything. I just went out and bought the latest transceiver, put up an aerial and was off and running. In fact I got on the air without even using a soldering iron. Impossible in the early 50s!

However, the old cunning was still there when the Novice licence was received. I was rearing to go but had to wait over a weekend to be allocated a call sign. But, it was necessary to see if the aerial was working, wasn't it? If it was no good it may not be worthwhile getting the call sign! I found a group of operators on 10 metres and tuned up on top of them. When they started complaining, I knew I was transmitting all right.

Some people say "in the good old days". The only thing good about them was that we were younger. The amateurs of today have it made, with computers, micro-controlled trans-

ceivers and the like. With buying our equipment, it gives us more time to play with it and our new modes. Just think, with Packet Radio, Satellites, ATV, RTTY, etc, we don't get the time to build our equipment, anyway.

And what of the future of amateur radio? Well, I think it will be high speed data transmissions, with SSB and FM finishing up like the AM mode of the past. But the amateur spirit will never change.

If someone ever invents a TELEPORT system, as seen in the Star Trek TV series, you may bet London to a brick, that there will be an amateur radio operator in there somewhere. AR

MORE HISTORY

The WIA is pleased to acknowledge the receipt of some more extracts of a 1920s publication, Amateur Wireless Handbook, safely kept for the past 50 years by Clem Scott VK4DW.

Clem includes the following information: Superhets were being developed and taking over from the TRPs, which were a bit touchy to manipulate. Of interest is the dressage of the wiring of these old timers and it is any wonder that hand capacity caused the operators a few headaches.

Filament control — Four rheostats were used (excluding the master rheostat on the panel), to control the filaments of the seven valves. These were adjusted to give best results, after which the brilliance of the filaments are controlled by the single-master rheostat on the panel. No 16 gauge square-section wire is used for connecting all the components and 16 gauge for the filament run.

After switch on and when signals were received the filaments rheostats and positive HT tappings were adjusted for best results. Also adjusted for the best result was the screw, with knob control, on the bottom of the horn type speaker.

I can remember listening to the wrestling matches every Saturday night from Melbourne, in the late 20s, early 30s, on one of these old sets.

Time marches on!

Many thanks Clem for your most interesting contribution. ED

"Amateur Wireless" Handbooks

THE PRACTICAL "SUPER-HET" BOOK



With many original illustrations

ELECTRONICS IN THE 'OLDEN TIMES'

Alex Ellison VK4RU

5 Colthorpe Street, Boondall, Qld. 4034

My father began constructing radio receivers in the early 1920s. He was the local school teacher, and in a country community, in those days, was looked upon as a source of knowledge, first aid man, bush lawyer, etc. But he knew nothing of radio, either theory or practical. I was six or seven years old at the time, and have many recollections of the era, as seen through the eyes of a mere child.

I have no idea where he got his inspiration, but later on, of course, *Wireless Weekly* was very useful.

The first radios attempted were crystal sets, I was told, but I have no particular recollection of them. There were no suitable signals available on what is now the Sunshine Coast, except from Sydney, so there were no results. A valve set was then built, in partnership with a neighbour, who was a beekeeper/farmer/tinsmith, etc.

I remember this particular unit. A broadbeam was channelled to take the wiring and the channels filled with Bees Wax! Wire used was ordinary hard copper, telephone wire and soldering was achieved by the use of an ordinary plumber's iron, heated in a kerosene tin; flux was killed spirits. They later found the convenience of 'Fluxite', but never used rosin, as far as I can recall.

BRIGHT LIGHTS

The set did not work, and after a couple more attempts an entirely new circuit was used, which was a regenerative detector type. I well remember being fascinated by the bright bulbs used. It could not be made to work either, so my father made a trip to Brisbane, 63 miles (102km) by rail, to visit a Mr Price of Radio House. This gentleman confirmed the construction, but pointed out that the valve, though it lit brightly, had its filament (cathode) touching the grid. So Dad bought another valve and Mr Price assured him he could 'listen to Sydney tomorrow night'.

There was no joy immediately, with the set, but eventually Dad heard his first words on radio. The call 'Beauramis, Victoria' was repeated several times, and part of a Sydney programme was heard.

A check of the valve revealed the filament was again touching the grid. Several different types of valves were used and I can remember some, but not all the type numbers. There was a Marconi 'R' and a V24. Another valve I later used as a bedroom light, using four reconstructed telephone cells-in home made beer bottle jars, with sal ammoniac electrolyte and sheet zinc cathode. Later I used beer bottle jars as Leyden jars in static electricity experiments.

Radio batteries proved a problem. The 'A' battery was the car battery, but, as the car, a 1923 Studebaker, was infrequently used, it was a problem to keep the battery charged, and the car was hand started. 'B' batteries were expensive but a round-up of the school children produced several dozen Marmite and fish paste jars. Dad was able to strip the old cells and make a new recycled battery.

I loved to help, but Dad's temper fluctuated from benevolent to very irritated, when I got in his way. I learned a lot, anyway, and I could wind coils, both honeycomb and 'fan' type, with the best of them. I also learned to solder.

A GOOD AERIAL

Attaining a good aerial was a hassle, and I am sure this idea used by my Dad was original

for him, though it has possibly been used elsewhere, since.

We lived in a government house, on a hill, with a road around three sides. At the acute corner, on the road, was a huge gum tree, with a large fork some distance from the ground. To the western side was a pineapple farm and to the east, a sugar cane field. Dad decided to fly a kite through the fork of the tree, hauling a line attached to some aerial wire. He constructed a kite, complete with tail and when the south east wind blew, he tried to fly it through the tree. It was really hilarious.

It took no time for the kids to gather, also the neighbouring farmers. Most knew nothing about kites and even less about wireless. Dad was the expert, but every time he got the kite near the fork, the tail would get caught. This necessitated going through fences into either our yard or the cane field, to disentangle it. In the process some of the young cane was trampled. The neighbour's dog, a black and white 'bitzer' called Toby, a good friend of mine, had a field day. He enjoyed the game of picking up the ball of string, attached to the kite, and kept running off with it.

Eventually the kite flew where it was supposed to, but another problem arose, how to get it down from the tree. It was a good strong kite and it was anticipated that if left there, it would chafe the line through. Eventually dad gave it a mighty jerk and the tail came off.

A SOURCE OF WONDER

That aerial was a source of wonder to all. Tomato sauce bottles, with holes laboriously bored through the bottom, were used at each end as insulators. The holes were made with a hand brace, a metal rod and some grinding paste. They gleamed in the sunlight and were visible for some distance. The wire used was telephone wire.

This high antenna resulted in exceptional reception until it came to a sticky end when the road was built and graded and the tree was duly felled. We then had to use a 'normal' aerial from a pole in our yard.

ELECTRO-CULTURE

About the 1930s, there was a lot of interest in 'Electro-Culture'. Possibly many old timers would remember it and I think the subject has been resurrected in various guises up to the present time.

Basically the theory was that an antenna was erected, with leads to wires placed above the crop that was to be grown. It was thought that electric force drawn from the sky encouraged growth, and apparently many people wrote of fantastic results.

A very amusing story (fiction) was published about this time, and I think it was in *Wireless Weekly*. It seems that a farmer (Dave) decided it was too costly to put on electro-culture, as a major project and decided to first experiment with a pilot scheme on a banana plant.

Uncle Bill was sceptical, but the children were very interested, especially Harry, the ring leader.

A mast was erected to support a vertical wire, with points pointing to the sky. The lower part of the wire was anchored to post and grounded, via a circle of wire over which the banana sucker was to be planted.

The great day of the banana planting ceremony arrived. It was a Sunday and Uncle Bill, the local farmers and sky-larking children were

an apprehensive audience. Tea was provided, with corned beef and mustard sandwiches and Uncle Bill had something special hidden away in the nearby cowshed. Careful measurement of the banana plant indicated it was 27 inches (686mm) high.

CRASH, BANG AND GROWTH

Dave measured it every morning and carefully recorded the height in a note book. There was no change for several days then, one morning it had grown three inches (76mm). Amazing! This new idea seemed to be working. Actually, there had been a 'bit of a storm last night', and the lightning must have stimulated it.

Nothing more was noticed for a few days, then again there was another growth of three inches. Everyone was intrigued and again a summer storm was given credit for the growth.

There was not another storm for about a week, but on the Saturday there was a 'real beauty'. Smith's lost their roof, lightning struck a tree and brought it down across a fence killing a cow in its path. By this time, the story of electro-culture had spread far and wide, and next morning there was quite a gathering as Dave went through his measuring process.

Lo and behold, now 48 inches, a good 12 inches or more gain, overnight! Uncle Bill strolled over and examined the plant carefully, then strode toward the cowshed, returning with a bottle and tin mug, which he presented to Dave.

Dave was elated but Uncle Bill was still wary. "I say Dave, didn't you plant a Cavendish sucker?" "Yes", replied Dave. Bill, "Well wonders a Lady Finger and if your fancy idea can change a Cavendish into a Lady Finger overnight, it is really worth celebrating". Dave looked thoughtfully around the throng of children, then roared: "Where's young Harry?" But Harry was long gone!

RIDICULOUS, BUT TRUE

Earlier, when our neighbour was in partnership with Dad in the first radio project, they got in touch with an ex Royal Navy radio operator.

Both my father and the neighbour were of generous natures, anyway, they needed help with their pet project. They used to drive seven miles (11km) to Nambour to collect the Navy op and he would then stay overnight at one of our houses.

I now realise he may have been a good operator on spark transmitters, but he knew nothing about voice reception. He would pore over the circuit trying different things and spend most of the evening enjoying the hospitality. There was a vario-coupler in use and he would twiddle the knob with his right hand whilst pressing the left fingers to his forehead.

Our neighbour was the first to realise our Navy man was a bit of an empty vessel, but not before he had unsuccessfully tried, for several nights to operate the radio, using all the arrangements he could think of.

Ridiculous? Maybe, but true!



Something to ponder on:

Returning from a computer display trade fair, my teenage son was asked, "How did it go?" His reply: "It was much easier to communicate with the computers than it was with the attendants!" -VK4SS

IPSWICH AND DISTRICT RADIO CLUB

At a gathering of radio enthusiasts at a local Scout Hall, on the 28th August 1962, the Ipswich and District Radio Club was formed. From the large group present, a committee of six was selected to formulate the aims and policies of the Club. The membership fees were set at five shillings (50c) for seniors and two shillings and six pence (25c) for juniors.

On 12th February 1963, affiliation with the WIA was effected and the Club continued to prosper. Monthly meetings were conducted at the Scout Hall, but on 7th July 1964 the winds of change struck. As members felt that the Club now had more to offer, the fees were raised to one pound (\$2) for seniors and three shillings (30c) for juniors. Mr W Hayden, Member for Oxley, was elected Patron and the Mayor of Ipswich was elected as an Honorary VP, a position each succeeding incumbent has accepted. Due to pressure of office, Mr Hayden relinquished his Patronage in 1978 and that position was accepted, and is still retained, by Dr Sir Llew Edwards.

In August 1964, an application was submitted for a Club call sign and a station manager, VK4LI was appointed. The Club Station, VK4LI, was officially opened by Mr Hayden on 24th January 1965, using the VK4LI equipment at his home. Member enthusiasm was increasing and after a Club Award Certificate was produced in March 65, proposals for acquisition of a Club House began to emerge. Inquiries to the City Council resulted in the grant of some land, currently occupied by the Club House, the plans of which were approved in January 66. After many trials and tribulations, the efforts were justly rewarded when, on 26th July 66, the first meeting was held in the encumbrance free Club House, possibly a first for any VK4 club.

The members, now happy with a permanent home, were desirous of furthering the cause for amateur radio. The facilities for lectures and classes had vastly improved and training aids were constructed. A repeater licence was obtained and VK4RAI, channel 6900, was activated, firstly at the Club House, then at the current location at Mount Crosby. More recently, a UHF licence established VK4RWMM, channel 8375, to operate from the Club House.

In common with other clubs, even those not electronics orientated, the technology explosion has affected membership. The advent of computers and video recorders has provided another avenue for recreation with a resultant decrease in active club membership. This Club welcomed, as associate members, a group of TRS-80 computer enthusiasts, some of whom are also licensed amateur members of the Club. This is not the only computer type of interest to members, others being used in CW, RTTY and Satellite modes. Use of a VCR for theory classes was discounted, due to the impersonal nature presented by that format.

Meetings are held at 7.30pm, on the second and fourth Fridays of the month at the Club House. Theory classes are conducted each Thursday at 7.00pm, subjects being regulated to the requirements of the students. The club station, now VK4WIP, conducts a weekly net on Thursdays at 7.30pm, operating on 3.590MHz +/- 100kHz, from the first Thursday in April to the last Thursday in September. It then goes to 28.500MHz for the summer months.

The computer group meets on the last Sunday of each month at 1.00pm — a popular event.

All visitors are cordially welcomed, both on air and personally at Club meetings. Details of the Club Award are available from members and VK4WIP.

Contributed by Bob Linslet VK4ALI, President and Life Member of the Club.

THE CORAL COAST GROUP

Prior to September 1967, for radio amateurs living north of Mackay, the Kookaburra Net was most popular, but owing to QRM from Asian stations, and the fact that most operators had to sign out by 2130UTC to go to work, it did have some difficulties.

A clear frequency was found on 7.068MHz, where northern stations could have a clear reception, and on 28th September 1967, Charlie VK4BQ Townsville, Les VK4LZ Airlie Beach, Bill VK4XZ, at the time living at Charters Towers, Basil VK4ZW Cairns and Newton VK4QW of Brisbane, met at 2100UTC and decided to form a group to serve, mainly Northern Queensland. It was called the Coral Coast Group.

Evelyn VK4EQ of Townsville, was the next to join, followed by Vince VK4VJ, Vic VK2ARY and Bob VK3GR. Vic was residing at Coffs Harbour and was a friend of Newton's. He had also known Les in New Guinea.

The Group remained on 7.068 until 3rd September 1969, when QRM caused them to move to 7.060MHz, where it is still operating today.

As time was limited for most, it was decided to keep overs short, attempt to give each operator at least two overs, give signal and weather reports, state of health and short items of interest, and to leave long discussions until after 2130UTC. The net was also to encourage mobile and others in as many areas as possible, and those who were interested in propagation, state of the roads and other conditions.

The net is open for any station wishing to join in and today there are regular members from Cairns and Weipa in the north to Traralgon, Victoria, in the south. For breakers, there is always someone who will hear them, ask them to stand by and advise the Net Controller, who will call them in.

The net has been most helpful to many people in distress on the roads and at sea. At one time, a Canadian family aboard a yacht near Port Macquarie, en route from New Guinea to California, via Sydney and New Zealand, had a small sick child on board and were seeking medical advice. The net controller relayed the request to Frank Carey VK2AMI (now a silent key), who contacted a doctor friend in Sydney. Details were given and advice for a cure was relayed back. As a result, when they arrived at Port Stephens two days later, after battling heavy seas, the child was in good condition and made a speedy recovery. Later a letter of appreciation was received by the group, from the child's parents.

Usually, the net controller calls the most northerly stations at 2100UTC, then the most southerly. Then each station passes it to the next, working along the coast from south to north. If there is no reply, the net controller calls the next area and this continues until the farthest north station is reached again. After this, the controller calls for late-comers or DX.

The Net virtually controls itself and if the usual controller is absent, any of the usual members can take over and proceed as usual.

At times, due to skip and eastern QRM, the going can be rather difficult but, due to the great distance covered, there is always someone able to relay to another within hearing distance.

Much valuable information on propagation and working conditions has been gathered over the years and it has shown how different conditions are in the north from that in Victoria.

Les Bell VK4LZ

Box 40, Airlie Beach Post Office, Qld. 4741

Many DX stations have called in and recently ZS6DN from Pretoria contacted all on the Net. This is the fourth occasion he has been able to call into the Net at 2100UTC and it is most noticeable that propagation to the far north is always stronger than in the southern regions. For instance, he was S 5-6 at Traralgon, S 7 in Sydney, S 8-9 in Brisbane and up to S 9+ at Airlie Beach, Townsville and Cairns.

Many marine mobiles, overseas DX stations, all states of Australia, North and South Islands of New Zealand with several ZL stations almost regularly.

To 30th June 1985, over 49,474 contacts have been made on the Net, with 772 different call signs. Following is a list of the first 25 stations to call into the Net. Those marked with an asterisk still call in. VNs: 4LZ*, 4BO*, 4QW, 4XZ, 4ZW, 4EO*, 4VJ, 2ARY, 3GR, 4AB, 4AX, 4UN, 8XI, 5ZX, 2NS, 4JW, 4DO, 4SA, 4HB, 4OL/MM, 2ANZ, 4KM, 3OZ*, 2PA and 4RZ*. Prefixes who have joined in are: VNs: 1-9, ZLs: 1-4, FKB, P29, N6, ZS6, YVH, YCI and 9, YB0, VR2, WA6, ZK, EL, VE, KC, G3 and YJO.

Aeronautical mobiles to have used the Net are: ZL1AK1, VK4YT and VK4MAL and marine mobiles: VNs: 4OL, 4JJ, 4JM, 4JI (New Guinea), 4ALN, 3BAG, 2AU4, 2BN, 4CM, 4EP, 6NM, 6N (New Guinea), EL8EP, VEONER, ZL1DQ, ZK1DQ, VK3AUO, KS6ES, KS6EV, WA6GOU, VK4ATZ, VK4PHO, EL2EU, VK2APQ, VK4EP, VK4BV8, N6SPN, YJ0AXZ and VK4APM.

Unfortunately, the Net also has its Honour Roll of Silent Keys. Newton VK4QW, Basil VK4ZW, Vince VK4VJ, Ramsay VK4AB, Herb VK4JW, Stan VK4SA, Wal VK2SA, Ernie VK4CEB, Bob VK4NG, Vern VK4LK, Trevor VK2NS, Cedric VK3ARX, Freddie VK3BAL, Fred VK3YI, Stan VK3UE, George VK5CV, Graham VK9DJ, Eddie VK2BB, Sid VK4VT, Bill VK2ABZ, John VK2OJ, Ted VK4MH, Bill VK2WF, Casey ZL4CA, Colin ZL1BJL, Claude VK4ZY, Gerry VK4YB, Basil VK2HI, Frank VK2AMI, Frank VK4FN, Bob VK3AHF, Frank VK2IZ, Len VK4GD, Harold VK4DO, Geoff VK6NM and Harry VK4HK.

HALLEY'S COMET INFORMATION LINE

The CSIRO and Telecom are providing a news service about Halley's Comet. Recorded messages can be heard on telephone number 11622 in Brisbane and Sydney, and 11613 in Melbourne.

The telephone message includes information about Halley's approach, details of Space Missions, particularly the European Space Agency's Giotto mission and general information about comets and meteor showers.

The Giotto spacecraft will fly through the head of the comet during its closest approach to Earth next April and will send data and pictures back to Earth via the CSIRO's radio telescope at Parkes, NSW. Halley's Comet has returned every 76 years since, at least, the first documented sighting in 40BC.

BEACON ADDITIONS

The following are some additions to the beacon list, published in September AR, page 63, contributed by Bert VK5AUS.

28.200MHz ... K4FM5, 28.201MHz ... LU8ED, 28.210MHz ... K4KMK, 28.2175MHz ... WB9VMY, 28.253MHz ... WB4JHS/KF4UZ/B and VK2RSY, which was incorrectly listed, amended to 28.262MHz.

John WB4JHS/KF4UZ/B, requests amateurs look for his seven watt, continuous beacon on 28.253MHz and QSL any reception.

NO BLACK BOX?

or how to get going in the 1980s the 'hard way'

Aub McKibben VK4AFO

5 Concord Drive, Loganholme, Qld. 4129

Maybe it was the outworking of the effects of electromagnetic radiation (EMR) at a young age, but by 1980, the 'bug' was biting worse than ever and I just had to do something about getting 'that ticket'.

Actually my fascination with radio goes back to the 1950s when, I was being brought up 'just down the road' from a 100kW BBC broadcast station in Northern Ireland. The large tower and flashing navigation lights, at night, were enough to start any four year old's imagination running with wonder! All my father knew, was — 'its for the wireless'. But for me the bug had bitten.

Symptoms came fast when, a few years later, the family moved to another location where I could overlook a small mountain with a 1000 foot (305m) television tower, dwarfing the mountain. However, it was not until later years that I became interested in 'tuning around' on the family shortwave radiogram.

I scored a windfall in 1968 when, at the age of 14, my father decided that it was time to retire our 1950 model radiogram and buy a stereo unit. It wasn't long before the broadcast/shortwave radio was whipped out of the large cabinet and promptly placed in my bedroom where a piece of wire — as long and as high as I could get it — was attached. My shortwave listening days had begun!

After a short while I realised I could pick up some private citizens (they called them radio 'hams'), down at one end of the dial (160m), and would occasionally tune down there when nothing else was on. I gradually became more interested in what they had to discuss (it was mostly technical talk in those days), but occasionally one station would come on frequency with 'duck talk', which confused me a little. This was SSB.

I was fortunate to get-to-know a friendly amateur who explained the need for a BFO to resolve SSB and I then proceeded to add one to the receiver. He also allowed me to visit his station and, when I was handed the microphone to talk to someone in California, USA, at 2.30pm one afternoon, I was rather dumbfounded. Realising he was operating at about 14MHz on SSB, I searched this frequency and was amazed to hear the USA and other amateurs quite well. Thus followed a number of years of SWLing on the amateur bands. It is really amazing what you can do with a receiver that has an IF strip as wide as a barn door!

It was not until I had done some of the more important things in life, like a job, marriage and starting a family, that I had a little spare time to finally try for a licence. A quick phone call to DOC got all the papers underway and, before too long, I sat for, and passed, the Novice ACCP.

Having gone to the trouble of getting up to a good seven WPM Morse speed, I thought I had better keep the inertia going and practice hard for the next 'full call' CW exam. I sat and passed the CW and theory, now, what about getting on the air?

Well, that was the problem! I didn't have any equipment and our finances were being put to better use paying for a house, rather than a black box. Being the holder of a NAOCP and

AOCP licence and never having been on air, it was time to do something.

The receiver side of my problem was obvious. My old friend, the 1950 domestic shortwave receiver would have to do. It was reasonably frequency stable on 80 metres, as long as the table was not bumped, and sensitivity was good also. But what to use for a transmitter?

I built a two transistor (oscillator and RF amplifier) unit; my version having about half a watt output. It was crystal locked, so I figured that would please DOC, anyway, with that much power I wouldn't get out of my own backyard, would I?

Fortunately, and also unfortunately, I figured that 50kHz within the band edge would be 'safe'. This got me out of the CW QRM with the old receiver — but put me right in the middle of the slow Morse WIA broadcasts on 3.550MHz. What is more, they beat me to the frequency nearly every night!

A multiband, inverted vee, fed with open wire feeder was the antenna decided upon, with icy pole sticks as spacers. A 'link coupled' antenna tuner was built and also a SWR meter. The results were, at first, confusing and disappointing.

The transmitter would key for the first dit or dah — thereafter, it would not oscillate and the SWR meter made no sense, at all. The solutions were simple enough once realised — which was the hard part.

I had carelessly left the base bias resistor off the oscillator transistor of the transmitter and SWR meters need approximately five watts of RF to start to operate. I was only putting in about half a watt. Not to be outdone, I used it as a field strength meter, instead.

Soon, I was tuned up and ready to work the guys down the street. I sent out COs at about 12WPM, not believing I would get any replies, except for local amateurs. When I heard my call sign coming back the first time I nearly fell off the chair and I didn't copy a word of the QSO unfortunately, as I was so excited. However, I slowed the COs down and worked at a slower speed until I understood what FB TNX BCNU, etc really meant. It was great fun.

Before long, I realised that my miserable half watt was covering the east coast of Australia, and putting about a 5x5 signal into New Zealand, as well. I quickly learned a great respect for QRPP!

I battled with the old receiver for a while. Selectivity was poor and often three or four stations were on top of one another. But it is amazing how the human brain can be used as an IF strip in cases of necessity. Returning was necessary every few minutes due to drift and there was no beat note from the receiver in the transmitter, just a growl, because the strong local RF seemed to pull it off frequency. It was a challenge, to say the least, buy great fun, just the same.

Not everyone gets started with a black box, have the guidance of a radio club or amateur friends to help, but it was really worth the effort, as I have found a challenging and rewarding hobby, with many very special QSOs, both on key and phone, over the past years. I look, with interest, to what the future holds for the amateur.

THE LONG WAY ROUND

Moira Millgate VK8NW
45 Giles Street, Alice Springs, NT. 08700

Some Saturday mornings, when I was a little girl, my father used to take me with him to his workshop/office at the back of the post office. We passed the telegraph office on the way and I could see the operating room and hear the clatter of the Morse key. It fascinated me and I promised myself I was going to learn that language and find out what they said to each other.

Luck was with me when, in 1936, I found the Morse alphabet in a Wireless Weekly and included with it, an article on "How to Learn the Morse Code". I have been carrying this article around with me ever since and it is well torn and tattered now.

In those days, it all seemed far away and beyond my reach but in May 1942, I read an article in a Sydney newspaper, which said something like this: "If you would like to become a wireless telegraphist in the WRANS, apply at No. 2 Clarence Street for training in Morse code". I went there the next day, and about six months later, with the help of Mrs Florence McKenzie and members of her Signalling Corps, I passed the 22WPM entrance examination, required for the WRANS.

I stayed with Mrs Mac, as a member of her Signalling Corps, until I left Sydney in 1943 for HMAS HARMAN and a life in the Navy for the next three years.

For different reasons, that should have been the end of the story, except some 35 years or so later, two amateur radio operators from Queensland, crossed my path. In different ways, they convinced me that I ought to study electronic theory and become a radio amateur. One of these amateurs was Bob VK4ADZ of Bundaberg, my husband's brother; the other, Arthur now VK4KOB, of Gin Gin, Bob's friend.

On a visit to Alice Springs, Bob brought me helpful study books, and 'spied' out the land for a suitable future antenna site.

Arthur, some months later, when passing through, used a Shanghai to 'shoot' a long wire into our Jacaranda tree. We then talked to Bundaberg from our back lawn.

Arthur also left an eight WPM Morse tape with me while he and his family travelled to Ayers Rock and back. It was very encouraging to find I could read this tape after so many years. I then sent to Brisbane for an 18WPM tape, to see what would happen to my morale.

Exactly two years after Arthur catapulted his aerial into our tree top, I became a full call amateur radio operator. The electronics had been a problem, but different amateurs in Alice Springs were kind enough and helped me out.

Somewhere along the way, however, I missed out on being able to read those old post office chatterbox sounders ... but the buzzer does have a happy dancing swing to it, or didn't you notice?

How To
Learn The

MORSE
CODE



FIELD DAY 1939

The photograph at right depicts a group of WIA (Q) members at the completion of a very successful field day, on location at Eildon Hill, Brisbane, on 20th August 1939, just prior to WW II.

The suburbs of Brisbane were divided into mapped grid zones. The 'ENEMY' vehicle was followed on DF on 80 metres with the 'CHASER' vehicles receiving instructions, via two-way, on five metres.

At the far back are two Rover Scouts. Back row from left: John Thorley VK4RT (d), Pat Kelly VK4KB (d), Howard MacGregor VK4ZU (nl), Dr Margan Gabriel (d), Bill Harston VK4RY (d), Keith Price VK4KF (d), Albert Carter VK4LT (la), Visitor VK2??, Leo McMahon VK4LM, now VK2AC (la), Geo Hughes VK4HU (nl), Jack Files VK4JJF (d).

Front from left: George Gray VK4JP (la), Vince Jeff VK4VJ (d), Arthur Walz VK4AW (la), Alf Guildford VK4AP (d), Bill Chitham VK4UU (la), Jack Heine VK4JX, now VK3JF (la).

Present Status: (d) Deceased. (nl) Not now licensed, but still living. (la) Licensed and active.

Contributed by Arthur Walz VK4AW.



VHF GROUP 1958

At left is an early photograph of some members of the Brisbane VHF Group. The photograph was taken in August 1958, at the home of the first President, Jack Ross VK4JO.

The Group was formed at a meeting held on June 1958, during the 1958 WIA (Q) Convention, at Palm Beach, Qld.

Bruce Hughes VK4ZBD, later VK4BZ, was the Queensland Divisional President at this time. He was the first limited licensee to become president of the Division.

The VHF Group resolved to support the fledgling WICEN concept and undertook to build several WICEN communicators — a six metre, battery operated, valve transceiver, developed in VK3.



Above

In the photo are: Lionel England VK4DR, John Cartmill VK4ZAV, Lorimer Rickaby VK4VR, Alan Fuller VK4ZBF, Jack Ross VK4JO, Tom Barber VK4TB (VK4ZBH), Les Mallinson VK4LM, John Burton VK4ZBJ, Eric Edwards VK4ZAJ, John Pickles VK4FP, Lew Hill, and Bruce Hughes VK4ZBD. Notably absent from the photo were Mick Pettiford VK4ZAA and Tom Lane VK4ZAL.
Contribution and photograph courtesy B Rickaby VK4RXP

Left

Bruce Hughes, Queensland President, tests the WICEN communicator, which had been brought to the Convention from VK3, by Pierce Healy.



TELEPHONE AIDS FOR THE HANDICAPPED

British Telecom has recently produced a catalogue of some 70 products and services for customers who have difficulty in using a telephone. The catalogue covers devices for those with impaired hearing, speech difficulties, blind and visually handicapped and those with restricted mobility.

The 36 page book is being circulated to many of the world's telecommunications authorities.

One of the most recent innovations is the Claudio Converse, a portable speech synthesiser. It consists of a keypad connected to the telephone and can 'speak' up to 64 phrases at the touch of a button, including emergency messages such as 'I want the police!'

Other devices include amplifying handsets, Vistel, a portable deaf communicating terminal, and the Jumbo Button Terminal, which has large raised figures and letters for people with limited sight or dexterity.

Adapted from Information Technology from Britain, 30th August 1985





THUMBNAIL SKETCHES

Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld. 4101

NORM TYAS VK4TY (SK)

Norm was one of the real OOTers, having obtained his licence at Brisbane in 1932.

As principal of various Queensland State Primary Schools for over 30 years, in both country and city areas, his QTHs read a bit like the Lucky Starr song, "I've been everywhere man". It's a wonder his arms didn't become tired taking down and putting up his antennas. Norm wasn't the sort of chap to be satisfied with a dipole just strung up anywhere — rather he strove constantly for better, bigger and often higher skyhooks.



VK4TY at work. His equipment and desk were homebrewed to suit his needs.

QTH	Call	Location	Notes
A 499 001	VK4TY	QTH	QSL card
A 499 002	VK4TY	QTH	QSL card
A 499 003	VK4TY	QTH	QSL card
A 499 004	VK4TY	QTH	QSL card
A 499 005	VK4TY	QTH	QSL card
A 499 006	VK4TY	QTH	QSL card
A 499 007	VK4TY	QTH	QSL card
A 499 008	VK4TY	QTH	QSL card
A 499 009	VK4TY	QTH	QSL card
A 499 010	VK4TY	QTH	QSL card
A 499 011	VK4TY	QTH	QSL card
A 499 012	VK4TY	QTH	QSL card
A 499 013	VK4TY	QTH	QSL card
A 499 014	VK4TY	QTH	QSL card
A 499 015	VK4TY	QTH	QSL card
A 499 016	VK4TY	QTH	QSL card
A 499 017	VK4TY	QTH	QSL card
A 499 018	VK4TY	QTH	QSL card
A 499 019	VK4TY	QTH	QSL card
A 499 020	VK4TY	QTH	QSL card
A 499 021	VK4TY	QTH	QSL card
A 499 022	VK4TY	QTH	QSL card
A 499 023	VK4TY	QTH	QSL card
A 499 024	VK4TY	QTH	QSL card
A 499 025	VK4TY	QTH	QSL card
A 499 026	VK4TY	QTH	QSL card
A 499 027	VK4TY	QTH	QSL card
A 499 028	VK4TY	QTH	QSL card
A 499 029	VK4TY	QTH	QSL card
A 499 030	VK4TY	QTH	QSL card
A 499 031	VK4TY	QTH	QSL card
A 499 032	VK4TY	QTH	QSL card
A 499 033	VK4TY	QTH	QSL card
A 499 034	VK4TY	QTH	QSL card
A 499 035	VK4TY	QTH	QSL card
A 499 036	VK4TY	QTH	QSL card
A 499 037	VK4TY	QTH	QSL card
A 499 038	VK4TY	QTH	QSL card
A 499 039	VK4TY	QTH	QSL card
A 499 040	VK4TY	QTH	QSL card
A 499 041	VK4TY	QTH	QSL card
A 499 042	VK4TY	QTH	QSL card
A 499 043	VK4TY	QTH	QSL card
A 499 044	VK4TY	QTH	QSL card
A 499 045	VK4TY	QTH	QSL card
A 499 046	VK4TY	QTH	QSL card
A 499 047	VK4TY	QTH	QSL card
A 499 048	VK4TY	QTH	QSL card
A 499 049	VK4TY	QTH	QSL card
A 499 050	VK4TY	QTH	QSL card
A 499 051	VK4TY	QTH	QSL card
A 499 052	VK4TY	QTH	QSL card
A 499 053	VK4TY	QTH	QSL card
A 499 054	VK4TY	QTH	QSL card
A 499 055	VK4TY	QTH	QSL card
A 499 056	VK4TY	QTH	QSL card
A 499 057	VK4TY	QTH	QSL card
A 499 058	VK4TY	QTH	QSL card
A 499 059	VK4TY	QTH	QSL card
A 499 060	VK4TY	QTH	QSL card
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A 499 062	VK4TY	QTH	QSL card
A 499 063	VK4TY	QTH	QSL card
A 499 064	VK4TY	QTH	QSL card
A 499 065	VK4TY	QTH	QSL card
A 499 066	VK4TY	QTH	QSL card
A 499 067	VK4TY	QTH	QSL card
A 499 068	VK4TY	QTH	QSL card
A 499 069	VK4TY	QTH	QSL card
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A 499 071	VK4TY	QTH	QSL card
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A 499 074	VK4TY	QTH	QSL card
A 499 075	VK4TY	QTH	QSL card
A 499 076	VK4TY	QTH	QSL card
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A 499 078	VK4TY	QTH	QSL card
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A 499 087	VK4TY	QTH	QSL card
A 499 088	VK4TY	QTH	QSL card
A 499 089	VK4TY	QTH	QSL card
A 499 090	VK4TY	QTH	QSL card
A 499 091	VK4TY	QTH	QSL card
A 499 092	VK4TY	QTH	QSL card
A 499 093	VK4TY	QTH	QSL card
A 499 094	VK4TY	QTH	QSL card
A 499 095	VK4TY	QTH	QSL card
A 499 096	VK4TY	QTH	QSL card
A 499 097	VK4TY	QTH	QSL card
A 499 098	VK4TY	QTH	QSL card
A 499 099	VK4TY	QTH	QSL card
A 499 100	VK4TY	QTH	QSL card

How many OOT operators have their FIRST log book, compiled over fifty years ago? Here is a page extract from Norm VK4TY's first log. OOTers will recognise many familiar calls with pleasant memories, no doubt. As this is a photocopy from the log it has some shadows from the next page showing through, unfortunately.

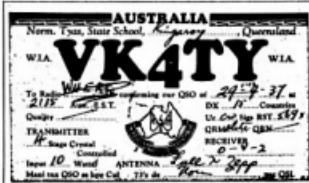
An ardent homebrewer, he applied the same principle to his gear — always seeking improvement. His second hobby, carpentry, was a most valuable asset which enabled him to construct his own operating desk to suit his particular needs.

Norm was always ready for a rag chew, nevertheless, he spent most of his time chasing DX — the end result being many contest placings and a long list of awards. His Australian DXCC, number 35, was a good effort, dated 26th August 1950. He was a long term member of the WIA and was invited to join several overseas clubs, viz CHC No310, QRP No713, QCWA No2553, ISSBers, etc.

During WWII he served in the RAAF as a Wireless Operator, being stationed in Port Moresby, Papua, Darwin and Townsville. As may be expected, Norm's CW 'list' and operating technique were very professional, indeed.

VK4TY finally settled at Manly in Queensland. His signal from this seaside QTH was outstanding and it is a great pity he did not have more years to enjoy amateur radio. Rightly, he could be called 'the complete and fair dimbul amateur', in that he built much of his gear to suit his need and participated in most of amateur radios activities.

AR



ROY L BELSTEAD VK4EI (SK)

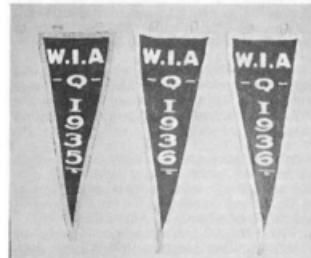
Roy was the first amateur in Oceania to contact Europe on 10 metres phone. The contact took place on the 5th October 1935.



Roy Belstead VK4EI at the age of 23.

This achievement in wireless could be likened to breaking the four minute mile in track athletics. Most believe it would be done eventually, but by whom and when? The Oceania amateur radio honour fell to a Queenslander and a TARC member, VK4EI from Townsville. No exact time has been recorded for the contact but, in view of the season, it is safe to say, the two way contact was made around 11pm EAST.

A feature of this 'first' VK/Europe QSO was that it occurred during a period of low solar activity. In 1933, the average Zurich sunspot number, expressed as Rz, was approximately five, this was the minimum between Cycles 16 and 17. For 1935, as the cycle began to strengthen, the Rz was given as 35. By October of this same year, when the QSO was made, it was probably around 60-65 — still not enough to expect a QSO with Europe on 28MHz, with QRP and no beam antenna. Consequently, it is reasonable to ask, "Did Roy VK4EI strike it lucky? Was there a magnetic disturbance of the ionosphere — even a minor one?" Only a check of past records can say if this was so.



Pennants awarded to VK4EI for DX Achievements.



Special Award presented to VK4EI.



The A B Shepherd Trophy presented to VK4EI in 1936.

WING COMMANDER KEITH McCARTHY, DFC.AFM.AE (RTD) — VK4DU

A 'peak' into the activities of Keith VK4DU (Macca to his mates) shows him clearly as a man's man, one who instinctively spiced his life with challenge and adventure. His best and most distinguished years — over thirty of them — were spent with the RAAF as both W/O and Navigator. This meant that AR had to take second place, out of necessity — even so, he held and used a dozen different call signs from places in Australia, New Guinea, the south west Pacific and the UK.

Keith's first interest in wireless was stimulated in a rather unusual way; it was not the construction of the ubiquitous crystal set followed by the purchase of a pair of headphones to test it out — rather the reverse. In Macca's case, an uncle who was a ship's W/O gave him a heavy GERMAN navy headset, way back in the 1920s — that started it. Keith had to build a set to accommodate them.



A Cigarette Lighter sent to VK4EI, from ON4AU, for the first anniversary to commemorate a 10 metres QSO.

Like the first sub-four minute miler, Roger Bannister, who gave credit for his success to the optimum conditions, so Roy Belstead was the man on the spot at the right time and place.

The Brisbane Telegraph and Rockhampton Morning Bulletin (16.10.1935) both reported the event, as did overseas magazines. The WIA Queensland Division presented Roy with three large pennants and a handsome silver cup, the latter being inscribed thus: "Special Award to VK4EI 1st VK/Europe 28mc Contact". He also received the "A G Shepherd Trophy", another very fine cup. The identity of this donor is now obscure, however it is thought he was a non-amateur member of TARC and/or a local identity keen on amateur radio.

ON4AU in Belgium was so delighted to be at the European end of such an historic event, as a first anniversary momento, he sent Roy a cigarette lighter engraved with the words "Remembrance of First 28mc QSO, October/Europe, VK4EI-ON4AU October 5th 1935." All these prestigious trophies are now held in perpetuity by the Townsville Amateur Radio Club.



Roy Belstead VK4EI obtained his AOCP in Townsville in 1934. He was then 23 years of age and a member of the TARC. As his early log books show, he wasted no time getting among the DX on all bands.

His first occupation was that of a clerk in the Queensland Railways. Later he journeyed interstate and completed a BOPC course at the Marconi School of Wireless, Sydney. Next he was employed as a technician at the Broadcast Station 2KY, for some years. Eventually, after several positions, he returned to Winton in central Queensland in 1937. Here he set up the business 'Belstead Electronic Repairs' and operated under a new call sign, VK4RAU. Ill health forced him to retire in 1978 and he became a silent key in April 1981. However, in the minds of most Northern Queenslanders, he will remain forever as VK4EI — the rather quiet, unassuming man, who broke the 10 metre barrier to Europe.

The author is indebted to TARC Historian, Evelyn Bahr VK4EQ, for much of the above information and photographs.

1978 — VK4PY
1981 — VK4DU
1983 — VM4AAA

Also the ship civil call signs: VM2039, VMPM, PZPM

After his RAAF discharge Keith and his YF sailed their auxiliary ketch "Pandemonium" to various parts of Micronesia, New Guinea and Malaysia. Using the call VK9AR regular contacts and schedules were kept with the VK mainland. An around-the-world cruise had been planned but this was cut short by unavoidable circumstances.

In 1965, a navigator and 'back up' W/O if needed, he was a member of the distinguished WWII veteran air crew which flew a 'worn out' Lancaster (fit only for the wreckers yard) from Australia to the UK, against all odds. Already almost a legend among his mates, this was quite possibly Wg Cmdr K McCarthy's finest hour. The whole hair-raising adventure is graphically described by author P Kilvington in the book "THE LAST LANC". — a must for all those who had anything to do with flying during WW11, it will grip you to the last chapter.

Stories of crazy capers in the Officers Mess in the Armed Services are legend. It is alleged that a case of spirits, which carried an exotic and unknown brand name was delivered to the Officers Mess. Macca's boys broached it with caution — and sampled it with greater caution. The common consensus was, "Send it over to the Sergeant's Mess."

Next day Keith enquired from an NCO how he enjoyed the gift (with compliments) from the Officers Mess. "Well, it was like this, Sir," said the Sergeant reflectively stroking his chin and running a tongue across his dry lips. "If it had been any worse we couldn't have drunk it — and if it was any better we wouldn't have got it!"

Rich in the satisfaction of many jobs well done, many places and faces seen and various call signs used to good effect, Keith now lives in retirement in a well-chosen spot near Beenleigh, just west of the Gold Coast and the City of Brisbane.

He can be heard on-air on 'Charlie Whisky' when the spirit moves him, with the rightfully-earned distinctive call sign of VM4AAA. The VM4 prefix is issued only to those Queensland OOTers who have held an amateur license for a half-century or more. May no injustice ever deprive him of it.

ERIC LAKE, VK4EL (SK).

Eric, gifted with a plethora of talents topped off by wit and humour, was one of the nicest OOTers ever to find his way into AR. Born in Shrewsbury UK, he eventually emigrated to Sunny Queensland and sat for his AOCP in 1933.

His first transmission was alleged to have taken place from Kangaroo Point, Brisbane, where he erected a 90 feet (27m) pole and started out as a DJ on the 200 metre band. This was short-lived as the skyhook crashed down in one of Brisbane's thunder storms (one wonders what the neighbours reacted). However, he soon turned his attention to HF, particularly 20 metres CW, where his ability as a top class operator became apparent.

It is often said that a good code man can copy Morse when it is no stronger than the background QRN; Eric VK4EL could do better. He could extract call signs and turn them into QSOs when only noise was apparent in his receiver; visitors to his shack will attest to this. He was even referred

In 1930 he qualified as a telegraphist in the Victorian Railways; no doubt this job moulded his 'fist' into that clear-cut, well-spaced, relaxed style of sending that was to signify his QSOs in later life.

Gaining the AOCP two years later (1932), he went straight to air with the call VK3FX. During 1934 Macca was QRV in Sydney NSW as VK2IM; however the PMG relieved him of this call and assigned it to the Harbour Police Launch in 1935 and in exchange he was allotted VK2VM. 1936 saw him back in Victoria using his original VK3FX and it was in this same year that Keith joined the RAAF.

During the war years (1939-45) Keith was engaged in active service on BEAUFIGHTER and LANCASTER aircraft in New Guinea and SW Pacific areas.

A short list of Macca's post-war call signs are as follows:

1946 — VK2VM again, at Richmond RAAF Station.

1948 — VK4FX Port Moresby (PNG at that time was part of VK4), as Chief Sigs Officer Northern Command RAAF.

1949 — G1AA, on staff of Empire Radio College RAF, Dabden UK.

1952, VK3FX again, Chief Instructor at RAAF School of Radio.

1964 — VK4DU, Wing Radio Officer at No 82 Wing RAAF Amberley.

1971 — VK9AR, now a civilian aboard his ketch "Pandemonium", Port Moresby.



ERIC LAKE

to with admiration as the 'bloke with super ears', able to decipher sounds beyond the range of the average listener. From his Camp Hill QTH, which was close to a main road and his reception permanently marred by low level car QRN, he nevertheless managed to work more 'G' stations with A1 mode QRP on the long path than anyone else in VK4 during the same period 1935-1939.

Shortly after the war he joined the PMG and served for many years on the technical staff at Broadcasting Station 4QN Townsville. He lived at the nearby suburb of Belgian Gardens, from

past achievements present objectives aspirations of R R C

future

The Redcliffe Radio Club was formed in 1971 with the banding together of a few licensed operators on the Redcliffe Peninsula. It was quickly discovered there were many who would be amateurs within a 30 mile (48km) radius of the Redcliffe City, who desired to acquire the skills and knowledge in theory, regulations and Morse code, to enable them to pass the, then, half yearly examinations set by the Department of Communications.

Volunteer instructors were willing to teach theory and the code and students began to qualify at the examinations. Membership of the Club was strengthened accordingly. This trend has continued to the present day and the Club now boasts a membership of 100 and is thriving.

Early in its inception, the Club instigated the Redcliffe City Award, with the financial assistance of the Redcliffe City Council. The promotion of the Award appealed to many active Club members and special award nets were instituted on a weekly basis, on Saturday afternoons and Wednesday evenings. In excess of 500 awards have now been distributed on a world wide basis and has played its part in the tourist promotion of the Redcliffe area. This, naturally, is a source of revenue for the Club.

At appropriate times, Club members have organised 'on air' displays at the annual Redcliffe Show and the Redcliffe Library. These efforts have assisted to create interest and the publicity has been responsible for an increase in Club membership.

As time inexorably passes, so to have some of the foundation members, One, VK41Z, was granted Life Membership, and his memory is further kept alive by his donation of a HF transceiver, which is available for use by Club members. In addition, the Club has inherited a fine collection of amateur radio books from the late VK4YB, and these are available for use, by members. A reference library of technical books are available on loan, also.

Meetings are held weekly on Mondays, at the Redcliffe Education Centre, from 7.30pm. The first and third Mondays are devoted to class instruction and discussion nights, the second is a General Meeting, with a Guest Speaker, if there is one available. The fourth Monday is a general workshop evening, with something of interest to all.

Members of the Club have actively supported JOTA each October, with 1985 having been no exception. This year the JOTA station demonstrated two metres, 70cm, RTTY and amateur television.

for mass production.

In his youth Eric had the honour of representing Queensland in a game of soccer against a Chinese team. The Bananalanders were beaten by 20 goals to one, VKAEL scoring the only goal for the home side. He naturally wanted to tell others of this accomplishment, but when he did, their reply was usually, "That's not a score mate, that's a race track starting price!" Consequently, Eric kept it a secret.

Author's Note:

Eric VK4EL did not earn the reputation of a worker of 'Gs' purely by chance. For him, a QSO with his motherland was a dedicated daily two hour ritual — part of his territorial imperative.

Around 4:30 pm local time the gear in his spartan downstairs shack would be tested; a 3 valve TRF receiver and a 3 stage transmitter with a modest 245 in the final; power usually around 20 watts. His operating position was a straight-backed kitchen chair — no soft comforts for Eric. Although capable of sartorial elegance when the occasion demanded, his shack attire even on cold days was spartan — a 'jacket howe' and shorts seemed to be all his bulky frame needed. With a mind so pre-occupied winter didn't exist.

As the receiver settled down to a steady crackle, a rather fat cigarette was rolled and lit. Listening intently, the band was very slowly tuned (no frequency operation then — an object lesson on DXing for any Novice). Intently, he poured all his aural senses into the band noise, listening for the 'fag' drooping from his mouth was forgotten — and out — a useless, spittole-soaked appendage. At the end of two hours it immaculately kept log usually showed more than one 'G' QSO, even in bad conditions. His sending 'fist' was a pleasure to copy — even at 30 WPM plus.

Craftman's Corner

Louis Olsen VK4KLO puts his well-honed talents to work by turning out Morse keys, some 360 of them, to date. Which goes to prove the art of Brass Pounding is far from dead.

Louis has a well equipped workshop, able to cope with most engineering tasks. He will make keys and very low loss, highly selective 70cm UHF cavity resonators to your specifications, if you supply the materials.

Contributed by Alan Shawsmith VK4SS



Louis in his well-appointed workshop

Just when you thought you'd seen it all

Latest Generation Receivers from Yaesu!



FRG9600 Scanner

Never Before! A scanning receiver that has so many features, offers so much. And it's absolutely ideal for the amateur, too! It offers continuous coverage between 60 and 905MHz, in all modes (SSB up to 460MHz), with FM and AM in both wide and narrow bandwidth. But that's not all:

You get 100 keypad-programmable memory channels, full rotary dial tuning as well as push-button tuning, fully programmable scanning in various modes . . . and much, much more.

PLUS it's a CAT unit: with the optional interface you can control its operation from most micros! Virtually unlimited customised control functions in software are possible!

Impressed? Not half as impressed as you will be with one in your shack!

Specifications:

Range: 60 — 905MHz (SSB 60 — 460MHz)
Modes (3dB bandwidth)

FM (N): 15kHz 0.5uV Sens (12dB SINAD)
FM (W): 180kHz 1.0uV Sens (12dB SINAD)
AM (N): 2.4kHz 1.0uV Sens (10dB S+N/N)
AM (W): 6kHz 1.5uV Sens (10dB S+N/N)
SSB : 2.4kHz 1.0uV Sens (10dB S+N/N)

Conversion: Triple for FM (N) AM & SSB, Double for FM(W)
IFs: 45.75MHz, 10.7MHz and 455kHz
Image rejection: 60-460MHz — 50dB typical
460-905MHz — 40dB typical

Memory Channels: 100
Power Supply: 12-15V DC 550mA (lithium cell back-up)

LIMITED STOCK!

(Includes power supply)

Cat D-2825

\$799

your nearest DSE store

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DICK SMITH ELECTRONICS
PTY LTD

B-052

FRG8800 Receiver



What about HF, you ask?

No worries. Yaesu design engineers have excelled themselves yet again!

- General coverage from 150kHz to 30MHz
- All mode, including AM wide and narrow and FM narrow
- 12 internal memories (push-button) with scanning functions
- Selectable AGC rates, noise blanking widths & tuning rates
- Dual digital clocks (great for different time zones)

And so much more!

PLUS, it's also a CAT system: add a microcomputer and the optional interface and you can transfer function to your micro!

And even more: with the optional VHF converter (fits completely inside) you also get 118 - 174MHz.

It also uses the '770' series of accessories: active antenna, and antenna tuner.

Specifications:

Modes:	AM, SSB & CW in both wide and narrow; FM (N)
Sensitivity:	AM, SSB & CW: 10dB or better (S+N/N)
FM (N):	20dB or better (S+N/N)
AM (W):	6kHz (~6dB), 15kHz (~50dB)
AM (N), SSB, CW 2.7kHz (~6dB), 8kHz (~60dB)	
FM (N):	12.5kHz (~6dB), 30kHz (~40dB)

Antenna Imp:

50 ohms and 500 ohms (VHF conv 50 ohms)

Power:

240V AC

Cat D-2820

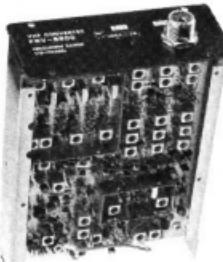
Alternative: FRG-8800 SW — 2MHz to 30 MHz range, otherwise identical \$629.00

Cat D-2821

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LIMITED STOCK!

Optional
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Yes! 118-174MHz from your FRG-8800. And it fits completely inside the set — operation is completely automatic. Full dial or pushbutton selection, same features as standard set.

Incredible versatility - and full CAT operation too.

Cat D-2823

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RECEIVES 25.50MHz & 800 — 1300MHz

- 2 Continuous tuning ranges
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- 20 ch Memory with scanning
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- 'S' meter, improved keyboard
- 5, 12.5 & 25kHz increments
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THE PRICE
\$599 inc tax
DON'T PAY \$699
90 day warranty. AC Supply Inc.



YAESU FRG-965 SCANNER \$Call



DON'T PAY \$799 RRP
 • 60-905MHz continuous
 • FMN, AMN, FMW, AMW modes
 • Receives SSB to 460MHz
 • 100 ch, search, scan, cat, etc
 19 months warranty... inc approved AC power supply.

REGENCY HX-2000E . . . \$445

- Hand-held programmable scanner
- 20ch, scans, searches, priority, delay
- Better than 0.7µV sensitivity
- 60-89, 118-174, 436-525MHz
- AM/FM modes
- 5/10/12.5/25kHz
- steps dependant on band sel.
- 90 day wait

**UHF
CB
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TRANSCEIVER
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Compare to Emtron Ace, Icom IC-40 and save!
 Comes with ni-cad battery, charger, rubber duck antenna, earpiece, belt clip, carry strap and full 12 months warranty.

THE PRICE . . . \$379 . . .
inc tax
This is a genuine offer, of course.

CHIRNSIDE beams, CA.33 3el triband \$309, CA.35DX 5el triband \$379, CA.35LX 5el tri-bander \$409.
CA42 4el 15/10m duo-bander on 4m boom \$179
CA.555 80-10m vertical \$199. 80 or 40m helicals \$35 ea, 20, 15, or 10m helicals \$30 ea.

**RF AEROSPACE beams, 7018GR 70cm 18el. \$129, 7011GR 11el. \$89
 90BGR 2m 8el. \$129, 208 2m 8el. \$79, 5el \$59, 4el. \$49, 3el. \$39, 2el. \$29, 10m 3el. \$89, 4el. \$129, 5el. \$129.**

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DON'T PAY \$829 RRP
 • 9-30MHz receive
 • SSB, AM, FM, CW
 • 12 ch memory, etc
 • keyboard entry, AC/DC
 12 months warranty

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- KR-400RC medium duty \$929
- KR-500 elevation rotator \$529
- KR-600RC heavy duty \$319
- KR-2000RC extra h/d 6 core cable \$1.50/m
 KS.050 bearing \$39

All directly imported
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All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALLSIGN	LOCATION
50.005	JAD4HJR	Honiara
50.006	KH656K	Honolulu ¹
50.075	V568IX	Hong Kong
50.169	DD1YAA	Japan
51.020	ZL1UHF	Mount Cawthron
52.033	P29BPL	Lolocate Island
52.034	W3A	Long Beach
52.200	V3KFV	Darwin
52.250	ZL2VHF	Manawatu
52.310	ZL3MHH	Hornby
52.350	V2K2RHW	Newcastle
52.400	V3K0MA	Wellington
52.420	V2K2RSY	Mawson ²
52.425	V2K3RGB	Sydney
52.440	V4KTRL	Gunnedah
52.441	V2K2RZ	Townsville
52.460	V2K3RQ	Mount Lony
52.490	V2K6RPB	Perth
52.470	V7KTRNT	Launceston
52.490	ZL3SIX	Blenheim
52.510	ZL2MHHF	Upper Hutt
52.540	V2K2RZ	Wellington
54.441	V4KRTT	Mount Mowbray ³
54.441	V1KRC	Canberra
54.441	V2K2RSY	Sydney
54.441	V6KTRW	Albury
54.441	V2K2RZ	Port Macquarie
54.480	V2K6VF	Darwin
54.480	V3KFV	Mount Lofty
55.000	V2K6RPB	Perth
57.400	V2K2RCW	Sydney
58.037	V2K6RPB	Perth
58.037	V2K2RSP	Nedlands
58.420	V2K2RSY	Sydney
53.425	V3KRM8	Bellarat
53.440	V4KRB8	Brisbane
296.110	V2K2RZ	Adelaide
296.110	V2K6RPB	Medlands
296.110	V2K6RVE	Robinstown
130.000	V2K6RVE	Robinstown

[1] A short note has come from Lee KH6EQI asking that the KH6EQI Beacon be re-listed, but in the note he says the beacon is operating on 50.600MHz! Now I am pretty sure that frequency is incorrect. It operated for a long time on 50.600MHz, and I listed it as such, to have it operating on 50.600, right out of the DX band, seems strange, so see it as a written error. For the time being, it has been included again, but on 50.600MHz; if incorrect, please advise me. Lee

(2) A message from Mark VK0AQ, at Mawson, Antarctica, indicates he has the beacon running there 24 hours-a-day and will keep it that way unless special problems of interference arise. So far there are no problems. The antenna is on Australia and the beacon runs about 90W output with FSK ident, although you may have to listen closely to make the identification. At the moment, Mark has problems himself, operating on six metres, and has no idea of knowing what the station may be as David VK0CK was not present to identify him as David VK0CK, though that would be easier if he had been there.

island, so the possibility exists that you could have the beacon and not have anyone to work it. Mark expects to be at Mawson until February 1986, so he will have a full E season to play with for contacts.

(3) A letter from Peter VK4ZD, the Acting Secretary of the Brisbane VHF Group, asks for their two metre beacon, VK4TRT at Mount Mowbray, to be added to the list. I am not sure why it was removed, but it has been added again.

SLP), Peter goes on the say that, except for maintenance, the beacon has served the amateur community for 10 years, and believes it to be the oldest two metre beacon in Australia. It is owned by the University of Brisbane's VHF Group, who

also operate a two metre repeater, VK4RBN, a 30cm beacon, VK4RRB, and a 30cm repeater.

NATIONAL CALLING FREQUENCY ON HF
A letter has arrived from Charlie Gnaccarini VK3BRZ, airing a matter which has received

VHF UHF -
an expanding world

success. He says: "Recently, I had my enthusiasm for VHF DX operation rekindled after many years of almost exclusive HF operation. The recent article in AR, on Aircraft Enhancement, was particularly responsible for this, and I am currently putting together a serious two metre SSB station.

"It has occurred to me many times, that VHF DX operation is very much a hit and miss affair, (mostly miss), since a number of random events need to coincide, (propagation conditions, operators being on the air, beams pointing in the right direction, etc). What is required is a national calling frequency on HF, where communications can take place throughout Australia, with some reliability, so that schedules can be arranged, tests co-ordinated, and so on.

"Some attempt was made years ago by keen six metre operators to use 10 metres for liaison, but 10 metres is not what it used to be! My proposal is to agree on a frequency on 40 metres and one on 80 metres, so that day and night can be covered. By being able to liaise with other operators, we may be able to improve the chances of working openings which we would otherwise not be aware of, instead of optimistically calling CQ with beams pointed every which-way. Perhaps we could even have a weekly 'VHF DX Net' on 80 metres. This would go a long way towards encouraging VHF SSB operation.

"Limited call holders would still gain some benefit from the HF nets by simply listening to what is happening. If the 80 metre net is held inside the Novice segment, than combined Novice/Limited call holders could make use of it too (the only problem is finding a clear frequency!).

"Perhaps someone in the past has thought of this before and I am merely re-inventing the wheel. I would certainly be prepared to give the scheme a try, if not just to find out what others are doing on the VHF scene, and to keep up with the latest gossip".

What you are asking, Charlie, has certainly been attempted in the past, in fact several times, I believe, but with only limited success. Maybe we did not have the right frequencies, but more likely we lacked the dedicated operators, with the requisite time required to maintain the net, and lacking the right kind of person to be net controller. It was used with quite a degree of success during the high years of Cycle 21, on 28.885MHz, and a lot of useful information was sent to other people on that frequency, at the time. Its usefulness tended to run out when propagation conditions changed and the frequency, itself, became unreliable. It also suffered from the accusations that some unscrupulous operators were using 10 metres to complete 50 and 52MHz contacts, which had only partially been completed on the six metre band, when it too faded out during the opening. These accusations are very hard to prove, of course, but I believe there is a measure of truth in the statement. Such a situation may not so readily arise here if the main purpose is to bolster two metre and above operation, but in the prime six metre days, when there was a mad scramble to work as many countries as you could, the opportunity was there to finish the contact by any means, and still claim a valid contact!

However, despite what has happened in the past, there seems no reason why the matter should not be aired again. Anyone interested should write to me and state their views, and I will indicate what frequencies (Specifically), and the times of operation (bearing in mind we have a two hour time difference across Australia), and on what daylights the net should be held, and who should control it. I am prepared to be a clearing house.

should control it. I am prepared to see a house for any opinions, so aired!

ROSS HULL MEMORIAL CONTEST

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

1 Quinns Road, Forreston, SA 5233

are some more rule changes this year, which it is hoped, will be acceptable to the majority. They will not, and cannot satisfy everyone on a country as large as ours, so some compromise will be required. Importantly though, please send **your logs** to the Contest Manager, at least keep the Contest alive while we try and sort out how best to run it; without logs, the Contest will surely disappear off the calendar.

UHF-QFV-10PPEEYX

USE OF VI PREFIX

The Department of Communications has approved the use, by all amateurs, of the 'VI prefix' instead of 'VK' for the period, 1st October to 31st December 1985, in celebration of the WIA's 75th Anniversary. VHF and UHF operators should note this also applies to them and is not restricted to the HF bands. It would be appropriate to use the new prefix during the Ross Hull Contest, this year.

SIX METRE STANDINGS UPDATE

Following my plea in August AR for more operators to add their scores to the present list of Six Metre Stations, it is pleasing to note some entries are coming in. Lindsay VK4ALM, has given an update to his listing, Graham VK8GB sent in that very comprehensive list I mentioned before, and Bert VK3ZYY has sent in his list for the first time. I still make a plea for others to do the same, there must still be some excellent scores around the country, unlisted. Once you have your listing with me, it is very easy to keep it up-to-date as QSLs come in. At least from our listings, the rest of the world can see that Australia, which is one of the most difficult VHF DX locations to work from many other countries, has had quite a share of exciting contacts.

I have received several requests from operators, for me to list what countries the highest scoring stations on the list, have worked. I can see no reason why this should not be done, as the results are not secret, and it would be, as Ben VK3ZZY says: "interesting to see what the potential list is and which ones of those I might have worked, had I been near a six metre rig, at the time."

with 28 countries confirmed and these are: 6.1.78

ZL3OK New Zealand; 8.17.78 VK9NI Norfolk Is.; 28.11.78 VK2HZ Aust; 19.12.78 JA4MBY Japan; 23.12.78 FK8AX New Caledonia; 7.1.79 P29B/P Papua/New Guinea; 7.1.79 YJ8ZY New Hebrides; 12.3.79 KG6DX Guam; 13.3.79 WA4TWNKL Alaska; 10.3.79 W6XJ USA; 2.4.79 HL9TG Korea; 5.3.80 KH6AIA Hawaii; 9.4.80 XE1EG Mexico; 13.4.80 KX6OC Marshall Is.; 13.9.80 C2N1NU Nauru; 6.10.80 VK2YH/2 Lord Howe Is.; 24.10.80 VK9ZG Willis Is.; 2.4.81 ZF2DN Cayman Is.; 11.4.81 KH3AB Johnston Atoll; 12.4.81 FO8DOR Taitung; 20.4.81 AF4R American Samoa; 2.5.81 VSSDX Brunel; 2.5.81 ZS2VZ South Africa; 3.4.82 ZK2RS Marquesas; 7.4.82 A2ZJ5T Tonga; 18.12.82 VK0AR Mauritius; 29.12.82 ZK2RS Niue Is.; 19.6.83 ZL4VO/CY Thatham. * means split frequency QSO, with VK2BA operating above 52MHz and the other station on 50MHz. All other QSOs were two-way, above 52MHz. A very commendable effort and one which many will find hard to better.

The letter from Lindsay VTR4CM, with his standings update says, that at long last he had received a QSL from A35GW. It took a long time and several letters, but eventually the treasured card arrived. Lindsay believes there are still quite a few disappointed stations waiting for their card.

Lindsay also worked A35HS (Bob), on 24-November 1984, on 52.055MHz, and sent the usual ITC, etc, direct to his New Zealand address, but nothing heard. As he says, you win some, you lose some!

15th July. No ZLs heard. Russian TV showed up on 14, 15 and 16 September 1985, usually between 0730 and 1000 UTC and reaching S9 on the 15th, at 0900. No sign of any JAs on 50 or 52MHz, and no beacons. Last contact was with JA4MBM on 26th April 1985. Also, a report that Graham VK8GB has worked JA4MBM on the 7th September, the same day the band opened on 10 metres to the USA's 4 and 5 areas from Rockhampton. Lindsay also spoke to FK8EB and FK1SB on 10 metres on 14th September and both reported no six metres for quite some time, and no VK TV either, in Noumea. Thanks for writing Lindsay, we all hope for something better this summer.

USING MOUNT ANAKIE

The Geelong Amateur Radio Club Bulletin reports, that after two years of time-consuming, and often frustrating negotiations, the GARC and WIA has secured exclusive use of a site on Mount Anakie to house their repeaters and beacon, VK33; RGL, RBU and RGG. Drawings of the tower and hut are being prepared and, when formalities are completed, construction can commence as soon as the weather improves. The Club is looking for a free standing tower, 14 to 20m high for use on the site. Can you help?

Approval has also been given for the installation of repeater, VK3RGC, on Montpellier, using a Philips FMB28 with 18W output. Antenna: transmitting, a folded dipole at 14m, and receiving, a folded dipole at 7m, with an Intel 8748 Microprocessor controller. Time out, three minutes, ident, seven minutes.

OVERSEAS

The Northern Hemisphere have recently passed through their summer Es period with the big news being the 2nd July Es opening across the Atlantic to the UK. Bill Tynon W3XO, and 'The World Above 50MHz' in QST for September 1985, says there have been other such openings in the past two years, but this one was the most widespread, and longest lasting, of any trans-Atlantic Es propagation yet experienced.

"Scattered reports have arrived of several stations, as far south as Washington, DC, working one or more stations across the pond. W3ZZ had a QSO with EI0RTS at 2358UT, W3WFM hooked up with G4DGU at 2345. WA1OUB, in New Hampshire, was alerted to the possibilities of interesting conditions at 2115, by very short skip to the north east, on 10 metres. He began calling on six metres and was rewarded at 2145 by a call on 28.885MHz from G4GLT. It would be 2230 before the select group of 100 Gs, who have special permits for 50MHz operation, would be allowed to begin transmitting on the band. The two stations hooked up again at 2230 for a two-way, six metres QSO, with 5x9 signals, both ways. WA1OUB went on to work G4BPY at 2232, EI0RTS at 2232, G6NB at 2234, GW3LHD at 2242, G3QOSS at 2244, G3CQO at 2255, G3WBN at 2302, and G4DGU at 2305. At 2356, EI0RTS was worked again and the last contact was at 0027, 3rd July with GJ3YHU. Except for G4GLT and EI0RTS, signals were weak, between 4xx and 5xx. Bob reported that the Gs said they had heard W4 and W5 earlier in the day."

"Good to see our US friends sharing in trans-Atlantic contacts. I did hear only this week (mid-September), that amateurs in the UK were all to have an opportunity of working 50MHz outside TV hours, instead of only 100; hope they get it. It should be possible to work across the Atlantic with reasonable consistency, the distance is about half that from VK to the West Coast of the US, which means about the same distance for us on the Eastern Seaboard to say Tahiti (F08). Even VK5LP has worked that far, but not often! With a large six metre population in the US and the thrills of early times or six metres for the G operators, means vigilance on the bands will certainly produce contacts, so we can expect to hear this being repeated from time to time before long, as more and more Gs obtain six metre equipment. The opening of 2nd July will be a shot-in-the-arm for six metres, both ways."

EME NEWS

Nothing heard from Doug VK3KUM this month, but there is some news from Lyle VK2ALU, in 'The Propagator' for August and September 1985.

Lyle reported having discussions with G3WDG,

in the UK, and VE7BBG in Canada, while on his holidays, on the subject of EME. Also by phone, with G3LTF and PA0SSB, all of whom have been worked by VK2AMW on either 432 or 1296MHz.

G3WDG has had several EME contacts with OE9XXI, etc, on the 2300MHz band. VE7BBG indicated that it should be possible to obtain echoes from the moon on the 10GHz band with 35W output, into a 10 foot (3m) dish. The receiving system would require to have a 2dB noise figure, with 500Hz passband. The interesting point is that all the above transmitter and receiver requirements have been individually achieved by amateurs, but not used for EME operation. It would be interesting to have to keep the moon within the 0.6 degree beam-width of the antenna, Lyle said.

A critical look at results obtained by VK2AMW, indicated that it may be possible to improve reception of signals by readjustment of the feedhorn of the dish. This work will keep the EME station off the air until further notice.

In the September issue of 'The Propagator', Lyle VK2ALU, reported the EME site building had been broken into again, just two weeks previously. The intruders were well equipped with cutting equipment, as they were able to destroy a heavy steel shroud plate, fitted over the padlock on the door, after the previous break-in. The hardened steel lock had been cut with large bolt-cutters. Fortunately, most of the equipment had been removed for checking, while the dish feed-horn was taken down for re-building, so nothing was stolen.

One wonders at the mentality of people who set about such destruction. I recall, years ago, the damage that was done, at the former site of the dish, by vandals and thieves, and the need, then, to shift the dish for greater security. Seems as though nothing is safe today!

OTHER NEWS

There is very little. Six metres has been almost dead. Channel 0 from Brisbane is often heard, particularly during mid-morning, and I did hear a VK4 working a VK2 around 0225 recently, but they faded out before I could make a call when they looked like finishing their contact.

Congratulations to David VK3AAU, who worked VK4AUR and VK4GC, on the 17th August, around 2130, via meteor scatter. Signals were understood to be quite strong and did not last long. That would be a normal comment, as MS on two metres doesn't usually last long, there is no time for niceties!

While the pros and cons of having Morse code examinations continues from time to time, it may be well to ponder the feats of those best at the game, as they appear under amateur radio in the Guiness Book of Records, per favour of 'Tiara News' and 'Break-In' August 1985: "The world record for copying Morse code is held by Ted R McElroy. He is credited with copying 17 characters a second. Yes, that's right — per second. That works out to 75.2WPM. McElroy set that record on 2nd July 1939, so if has stood for 46 years! The sending record, using a straight key, is held by Harry A Turner W9YZE. He sent at 35WPM, back on 9th November 1942. Last, but by no means least, Richard C Spencerley KV4AAA, holds the record for the most QSOs in a single year — 48 100. That works out to an average of 132 QSOs per day."

At 132 QSOs per day of, say, 12 hours per day, every day for a year, that is 11 per hour or just over five minutes per QSO, right throughout the year. Phew!

Also from 'Break-In', ZL1HV "Revealed at the Paris Air Show, by British Aerospace, were plans for a Mach 9 aircraft, which will be able to carry 69 passengers from London to Sydney in 45 minutes. So early next century, it will be possible to have a QSO before breakfast in London and deliver the QSL card to VK2 the day before it was made! But I doubt if even that would be good enough for some DX hounds."

Closing with the thought for the month: 'By ever taking out and never putting in, one soon reaches the bottom.' And don't forget to enter a log for the Ross Hull Memorial Contest starting next month. Full rules and details appeared on page 44, in last month's AR. 73. The Voice in the Hills.

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CONTESTS

CONTEST CALENDAR

NOVEMBER

9... Australian Ladies' Amateur Radio Association Contest (Rules this issue)
9-10... European DX Contest — RTTY Section (Rules — July AR)

23-24... CO WW DX CW Contest

DECEMBER

7-9... ARRL 10metre Contest
14-16... ARRL 10metre Contest

14... Ross Hull VHF Memorial VHF Contest Begins (Rules October AR)

JANUARY

8... Ross Hull Memorial VHF Contest Concludes

11... 40metre World SSB Championship Contest

12... 75metre World SSB Championship Contest

18-19... 160metre World SSB Championship Contest

20-21... 20metre World SSB Championship Contest

26... 20metre World SSB Championship Contest

Note that the World Championship Contests are sponsored by "73" magazine, not "CQ" magazine as stated in October AR. The rules for these five contests will appear in December's issue of AR, as previously indicated.

As I write the notes for this month, the very large quantity of logs from the Remembrance Day Contest are flooding in. Opening and sorting of same has been proceeding and, naturally, I have been quite interested in scanning through the comments, which were forwarded with the logs.

I would make two observations which come to mind — it is surprising just how many people cannot spell the word "REMEMBRANCE" and it is also surprising, just how many operators fail to endorse the envelope, containing their log, with the name of the contest, despite the fact that a requirement for it appears in the rules.

Perhaps we can improve on this item in future. It may seem just a little thing, however, when there are many envelopes to be opened, it allows me to differentiate between contest logs and other correspondence, some of which may require instant attention.

It has been most pleasing to note that the vast majority of logs for this year's contest have been of a much improved standard, as have the "Dupe Sheets", when provided. Congratulations chaps and ladies, let's keep up the standard, in this regard.

Generally speaking, the Remembrance Day Contest seemed to run fairly smoothly. I have already received many requests from all over the country for the time for repeat contacts on VHF to be reduced even further and, judging by my observations, this may well be warranted. Unfortunately, I was only able to spare time to operate mainly on the Saturday and my own personal score is lower than usual, although, even under these circumstances, the going seemed somewhat slow. I will have more comment to make when the results of the contest are ready for publication.

VK NOVICE CONTEST — Activity in this contest seemed only fair and as usual, the going was very slow. I certainly hope to see quite a big improvement in support of this contest in 1986, although those who were participating seemed to be really enjoying themselves.

Rules for the 1985 ALARA Contest were only provided to me in time for this issue, however, I do hope that you will support our lovely ladies in this event. I thank Joy VK2EBX, for providing me with the details and I wish ALARA well in all their activities.

Pressure of a number of activities means that the notes for this issue will be much shorter than usual. There are still many things to be discussed and points to be brought forward. I already have received some comments on the subjects of the Contest Championship Trophy and the need to reduce the number of contests. On this latter point, I would offer my opinion, that while our VK Contest Calendar may not appear to be excessive, one must be prepared to accept the fact that contestants do not form the majority of operators, and spectrum space must be available for all to

operate with as much freedom of action as possible. No doubt, much more is yet to be said on these and other related subjects.

Please keep your ideas and opinions rolling in. Whilst I may not reply personally to every letter, you may rest assured that I value your contributions and they allow me to formulate suggestions and recommendations, based on a reasonably widespread body of opinion.

Any contest station needs to have equipment, which is well set-up and is top line as far as performance is concerned. Not the least of the necessary items is a good rotator for the directional antennas employed. I have recently taken steps to replace my rotator, which was a "Ham M" which I have had in use for about 25 years. My research into the subject of rotators led me to select one of the new Multi-Torque units, which uses up to four separate motors. I must admit that I was more than pleasantly surprised by the very fine design, construction and engineering, which has gone into this unit. The approach has obviously been well thought out, even to such refinements as the neatly machined drain channels beneath the underside of the unit.

My next issue of notes will be the last for 1985. The time does certainly fly past and we must continue to make the most of what opportunities are offered to us as we expand our experience.

I trust that for the rest of this year, all your activities will be successful, and you are able to enjoy your hobby to the utmost.

So, until next month, I pass along my best wishes to you.

ALARA CONTEST

ELIGIBILITY — All licenced operators throughout the world are invited to participate. It is also open to SWLs.

OBJECT — The object of the contest is participation! YL works everyone, OM works YLs only. One contest (combined phone and CW) run over 24 hours.

PERIOD — 0001UTC Saturday, 9th November 1985 to 2359UTC Saturday, 9th November 1985.

SUGGESTED FREQUENCIES — bands to be used are: 3.5, 7, 14, 21 and 28MHz only. The following are suggested frequencies for easier location of contacts.

PHONE	CW
28.480-28.520	28.100-28.200
21.180-21.200	21.100-21.200
21.350-21.370	14.050-14.060
14.180-14.200	7.010-7.020
14.280-14.300	3.525-3.535
7.100-7.120	
3.570-3.590	

OPERATION — Phone and CW operation. Each station may be counted twice on each band for credit: once on phone and once on CW. All contacts must be made in accordance with operator and station licence regulations. No net or list operation, no cross-mode.

PROCEDURE — Phone: Call "CQ ALARA CONTEST", CW: Call "CQ TEST ALARA".

EXCHANGES — ALARA member: RS or RST, serial number, starting at 001. ALARA member, name, YL non-member or OM: RS or RST, serial number starting at 001, name.

SCORING — Phone: Five points for each ALARA member contacted. Four points for a YL non-member contacted. Three points for OM contacted.

CW: Double all points for CW contacts.

SWL: Five points for ALARA members logged. Four points for YL non-members logged.

LOGS — Single log entry (but Australian YL Novices entering for the Mrs Florence McKenzie

Ian Hunt VK5QX
FEDERAL CONTEST MANAGER

P.O. Box 1234, GPO, Adelaide, SA 5001.

CW Trophy should indicate their CW score separately, also). Logs must show date/time UTC, band, mode, call sign worked, report and serial number sent, report and serial number received, name of operator of station worked, and points claimed.

LOGS MUST BE SIGNED — Logs to also show full name, call sign and address of operator, and show final score (points claimed). Logs must be legible. No carbon copies. No logs will be returned. Decision of the Contest Manager will be final. Logs must be received by the ALARA Contest Manager on or before 31st December 1985.

CONTEST MANAGER — ALARA, VK2KFQ, 31 Cadell Street, Wentworth, NSW 2648.

A TROPHY — Will be awarded for the highest aggregate score over five years (commencing 1983) of a licenced YL operator (not necessarily Australian).

MRS FLORENCE MCKENZIE G W TROPHY — This will be awarded to the Australian YL Novice operator with the highest CW score (not necessarily an ALARA member). Minimum score 50 points. The actual trophy, because of the size and weight, will not be forwarded to the winner, but a certificate bearing a photo depicting the trophy, will be sent to the winner each year.

CERTIFICATES — Will be awarded for the following:

Top overall score
Top score Australian YL Novice (Mrs Florence McKenzie Certificate)

Top ALARA member score in each country and VK call area

Top YL non-member score in each Continent

Top OM score in each Continent

Top SWL score in each Continent

Top VK Novice score

Top Overseas YL Novice score — CW

Mrs Florence Violet McKenzie, 1892-1982, was the first lady in Australia to take out a transmitting licence, in 1921. She passed the AOCP in 1925, and obtained the call sign 2GA, later VK2FV. Mrs Mac taught Morse code to thousands of people, particularly service personnel, during the 1939-45 war years. In 1964, the Townsville Amateur Radio Club kindly donated a trophy in her memory.

VK VERSUS THE WORLD CW QRP CONTEST

DATES: Saturday, 16th November and Sunday, 17th November 1985.

DURATION: A total of 48 hours from 0000UTC 16th to 2400UTC 17th November.

MODE: CW only.

CALL: CO QR

BANDS: 160 to 10 metres, no WARC operation.

SECTIONS: QRP, Single operator, QRP, Multi-operator, QRO. Single operator. All multi-band or single band.

PERIOD: Full period — 48 hours or half period — any 24 consecutive hours within the 48 hours period.

EXCHANGE: All stations use six digits comprising RST and serial number, starting with 001 up to 999, then starting again with 001.

SCORING: QRP stations indicated power output must not exceed FIVE WATTS. QRO stations power exceeding five watts. Each contact shall score points based on the following.

Up to one watt — six points, between one and two watts — five points, between two and three watts — four points, between three and four watts — three points, between four and five watts — two points, over five watts — one point. QRO stations over five watts QRO/QRP only allowed.

SAMPLE LOG:	Date/Time UTC	Band MHz	Mode	Callsign	RS(T) & serial No sent	RS(T) & serial No rec'd	Name	Points
9/11 0135 0141	28 21	SSB CW	VK3DML VK2SU	59001 59902	58028 59945	Margaret Freda	5 10	

MULTIPLIERS: Every contact in a different ITU zone counts as a multiplier, on each band.

BONUS SCORE: Field stations using battery/solar/wind/hand generated power, excluding motor generators, multiply the grand total score by 1.5. Field stations to be erected on the same day as the contest.

CONDITIONS: One contact in each band in each 24 hour period. A separate log sheet must be used for each band. Each logged QSO to show: DATE, TIME (UTC), STATION WORKED, RST EXCHANGE, MULTIPLIER, POWER OUTPUT.

POINTS CLAIMED and **GRAND TOTAL SCORE**. The grand total score is derived from the total points from all bands by the total multipliers from all bands by the bonus score.

ENTRIES: All entries must have a summary sheet showing, the calculation of the grand total score plus, name, address, call sign and signature, with a declaration stating ... "I certify that all entries in my contest log sheets are true and honest." Entrants are requested to include a brief description of their station's equipment and any comments/suggestions.

CERTIFICATES: To the QRP single operator and multi-operator, in each country, with the highest score, in each section. To the CRO operator with the highest score in each section. To the highest scoring CW OPERATORS QRP CLUB member in each section.

CLOSING DATE: Entries to be addressed to: The Contest Manager, J Elliott, 8 Queens Street, Rosedale, Vic. 3847 no later than 14th December 1985.

Contributed by Rai Taylor VK7YDF

AR



EQUIPMENT REVIEW

Are black boxes getting smaller, or am I putting on weight?

Written and reviewed by David Furst VK3YDF



Kenwood have released a new hand-held, two meter transceiver, the TH21A. Of itself, the release of the unit probably warrants little attention, however, the TH21A marks a new direction in our hobby.

The era of hand-helds began in this country with beasts such as the Ken transceiver. Hand-held it was, but only if one had a very large hand. From these inauspicious beginnings began the revolution (well, bloodless 'coup d'état'). New designs followed, making the rigs smaller, adding frequency synthesisers and then built-in computer power. I personally didn't like this. A unit (in my humble opinion) should be simple beast, a joy to use and not overly complicated. The advent of something I could carry around and talk into was nice. Loading it with enough computer power to calculate pi to a zillion decimal places just meant that I had to study away my leisure hours, working out how to drive the thing! To add insult to injury, by the time I had halfway mastered the evil device it had been superseded a couple of times.

The IC2A was a good sturdy unit, simple

enough to drive without a diploma, light enough to carry around and it performed very adequately indeed. Here was a rig I could walk hand-in-hand with, into the sunsets.

The IC2A (and its clones) were a boon. They suffered only one fatal flaw. Have you ever tried to carry one in your pocket? It was probably very practical. If you happened to have pockets that large, okay — but don't go to the Supermarket, because they will probably think you are a shoplifter and spirit you freedom away before you can say "Hand-held".

The TH21A solved this (and coincidentally I can now frequent supermarkets un molested). Kenwood realise you don't hold a hand-held rig all the time. Sometimes it would be nice to just tuck it into a pocket and attend to other matters — or just daydream. Yes, a truly pocket-sized rig.

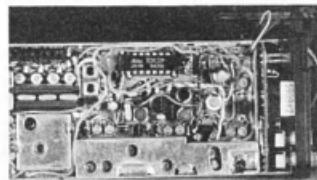
The specifications state that (including projections) the rig is 65.5mm (.25inches) wide, 127.5mm (.5inches) high and 32mm (1.25inches) deep. It is about the same size as a packet of cigarettes.

How does it perform? Really well, no less. Compared to the IC2A it comes in well. This is most appropriate as this rig has similar controls and facilities as the 2A, the only difference being that the TH21A doesn't have a separate on/off switch — it is incorporated into the volume control.

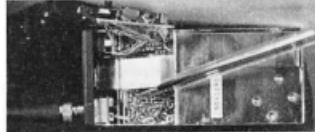
Both cover 144 to 148MHz in 5kHz increments. Both receivers are double conversion superhet with adequate sensitivity, though the TH21A is better with 2dB quieting for an input of .5 microvolts, as opposed to the IC2A with its 20dB quieting for the same input.

The Kenwood pushes out one watt on high power and uses 600mA. The IC2A has 1.5 watts for an input of 550mA. This is where the only significant difference in performance shows. The IC2A will transmit for a reasonable time before the batteries die, the TH21A has smaller batteries which don't last as long. This is a good reason to buy a spare battery pack, as you will always have fresh power at hand.

Living with one of these units is a pleasure. It is not only small, it qualifies for a 'Tiny Award'. It is light in the pocket and very comfortable in the hand. The transmit button is sensibly placed and doesn't tire the button finger. Controls are well placed, and are most useable. I particularly like the squelch pot, which has a knurled button instead of



Internal View.



Internal View compared to a "throw-away" BNC connector.

a knob and the squelch is a good reliable 'set and forget' type. The battery pack slides onto the back of the rig and the spare pack is slim in the pocket.

A slightly radical departure from normality is the antenna connector. This resembles a RCA connector with a thread on the outside so you may screw something onto it securely. The antenna mounting is good and tight, but if you use their BNC connector it will twist the inside of the connector five or ten degrees each time you connect or take something off the rig. On my unit, this broke the internal connection going to this connector. This is the only problem I have encountered with the unit — the physical design is excellent.

I was silly enough to repair the above problem myself. Probably boyish curiosity, just wanting to see the insides of the new toy. If you are a micro-surgeon by all means open the unit. The rest of us should leave well enough alone (it has the tiniest packed internals I have ever seen).

The unit arrives with a circuit diagram, which is immensely larger than the unit itself. This must be a new record for a rig to circuit diagram ratio.

The earphone is excellent and naturally, tiny. My unit came with a vinyl case and belt clip. I personally don't like vinyl cases, on principal, and belt clips seem irrelevant for a rig which fits so neatly into a pocket. I have a belt on with the AR advertiser who sold it to me. If I find no use for the belt clip in twelve months, he is giving me one of my dollars back! You may find a use for this clip — but for me, I intend to get that dollar!

The TH21A does cost more than an IC2A, but then it really is a portable rig. I am extremely pleased with mine. If you get one, I'm sure you will be too!

The TH21A also has a 70cm brother, the TH41, which is physically identical and is photographed on this page. The unit for photographing was supplied by the courtesy of Am-Comm Electronics.

BUYING, SELLING or WANTING?
HAMADS make it happen.
Eight Lines Free to Members.



HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

With most of the major overseas contests tucked away for another year by the end of this month, Spring over, and Summer in the offing, now is the time to check the antennas and associated coaxial or open wire feed lines, before one starts their Christmas shopping list. Perish the thought, another year has slipped by without significantly adding to the DXCC list.

Whatever power one runs, efficiency in the antenna system will give you an edge on hearing that elusive country that you have been seeking and one must hear the station before they can call it.

I have found it important to check all connections on the beam, tighten bolts, check water-

proofing, and renew if thought to be doubtful, examine the tape that the birds have cheerfully played with, also the coaxial cable if they have laid that as a delicacy too. Check rotator couplings and wiring, also all earths, not forgetting the SWR on all bands across the frequency range, letting them down in the back of the log book for future reference.

You are now prepared for another season of good listening and whilst in the mood, check all the connections in the shack, vacuum around the inside of the equipment, with a plastic nozzle attached to the XYI's vacuum cleaner and of course don't forget to have the equipment turned off. Then it is the time to put the feet up and tune across the bands, knowing that your equipment is 'top notch'.

USSR

Many USSR stations, using the prefix of EN0 and 9, have been active. No reason can be offered for the use of the unusual prefix. Work them and wait, they will QSL, with the SWL cards coming in as well.

QSO NUMBER 500

Nothing unusual about the heading, which is a little misleading but herein lies quite an interesting story.

Mike VK4BFO, on the 18th August this year, made his 500th QSO with John G4KJF located at Disc on the Norfolk/Suffolk border of England. Mike's QTH is in Mt Isa. Their first QSO was Christmas Day 1980, on 10 metres. When this band closed, 15 was used, generally on the short path around 0800 UTC. These gentlemen have always had two overs each, even though the signals may be 4x1 each way. Amazingly they have only had two QSOs on 20 metres, due to Mike's location in proximity to a hillside.

So far this year, the duo have had 35 QSOs at the time of writing these notes and Mike has been absent from the FT8 for three months. The equipment on the VK end consists of a FT107M/DMS driving a FL2100Z into a TH6.

A fine effort gentlemen and this proves that the signals are there, if one cares to persevere. More listening and calling girls and boys, will produce more QSOs!

GUAM

Ed KB6AW/KH2, a subscriber to this column, has kindly written an insight to the island where he lives during his tour of duty.

Guam is a small island, 46 kilometres long by 19 kilometres wide, maintaining a population of 175,000, with 20 percent living on the mainland. Of this population there are approximately 20,000 people that are transient service personnel.

Guam is known as the "hub" of the Pacific, as it is a major link for NASA satellite communications, being less than 10,000 km from Los Angeles, 5,800 km from Honolulu, 5,600 km to Singapore, 4,800 km to Manila and a mere 2,500 km from Tokyo.

This island has two types of seasons, wet and dry, no in between. The wet season is from July to December when the surrounds are lush and green. The temperature ranges from 30 degrees to 24 degrees Celsius with an annual rainfall of 2,160mm. Quite a lot of rain!

The highest point of the island is Mount Lamlam, with a height of 400 metres. The lowest point is to the north where there is a plateau located, dotted with several undisturbed jungles and is the habitat for about 75 percent of the population and where the Andersen Air Force Base is located. The population density is about 680 people per 25 square kilometres.

Located at the southern end of the island is Apra Harbour where the main Naval Station may be found. Nearby there is a small island known as Cocos Island, which is about 7 square kilometres in area and is quite a tourist attraction because of its sandy beaches, hotel and a zoo, which is home to many tropical birds and other wildlife.

The proud population of this island in the Pacific are made up of a mixture of Chinese, Japanese, Koreans, Filipinos, Micronesians and some of Spanish descent without including the itinerant workers for the services from the United States. The Guamanian men are known as Chamorros and the ladies as Chamorritas.

Guam has quite a history. After many years of rule by the Spanish, it became a Territory after the Spanish American War and the Treaty of Paris in the year 1898. Over half a century later in 1950, the Chamorro people were given US citizenship by Congress. In 1971, Guam elected its first Governor after many years of one having been appointed by Congress. The following year they elected their first delegate to the United States Congress.

I feel that Ed should be the Public Relations Officer for the island, as he states that the island is a DXers dream, with about half of the 100 amateurs being active with very little QRM. Also duty free shipping exists, with some of the prices being about 50 percent of the same item in the United States.

With good weather and lots of water sports, to me it sounds marvellous and a lot better than 'punching' the keys on this word processor, to write my notes.

Thankyou Ed, for giving us an insight into the land, its people and attractions from where you operate.

SAO TOME

Apparently the Carolina DX Association Bulletin recently reported that INDEXA has been assisting two Brazilian amateurs with plans for a DXpedition to Sao Tome. The planned operation of 10 to 14 days duration, possibly this month, apparently has the sanction of the President, Dr Manuel Pinto de Costa.

It appears the main purpose of the proposed operation, anticipated to take place later this month, is to take the 'heat' off Luiz and allow a more orderly segregation of the DXers clamouring for this country.

Let us as DXers, firstly hope that it comes to fruition, secondly that propagation will allow all VKs to hear, before calling, this much wanted country and thirdly, let all behave and show the true spirit of the hobby with impeccable operating habits. Many, from VK and other countries may have to practice, before-hand, by using their dummy load, if they possess one!

Incidentally, the cards of Luiz S92LB, are being accepted by the ARRL DXCC Desk.

LATE NEWS

Unfortunately, an International Telegram from Dieter DK9KD, arrived too late for inclusion in the last issue. Dieter, advises of a concentrated onslaught of removing this much wanted country further down the DXCC ladders "wanted list".

It is hoped that all VKs that wanted it for a new country, made the grade. QSL to DK9KD, unless advised to the contrary, by the operator. Good luck, one and all.

PREFIX RETURNS BONANZA

A group of amateurs, under the banner of the Uruguay DX Group, have decided to reactivate the

CY prefix, which has been sitting unused on the "shelf" for more than a decade.

Eleven operators intend to activate "Isla de Flores", a small island with an area of six square kilometres located just over 10km from the coast. The island has quite a history, having been discovered by Juan de Solis in 1516, during his search for a route from the Atlantic to Pacific Ocean.

The first "Lighthouse" was the stern lantern of the unfortunate Spanish frigate "Loreto", which was wrecked on the island in mid-1792. The lantern was placed at the highest point on the island, remaining there until the present light-house was built in 1798.

The operators are being transported to the island by the Uruguay Coast Guard and hope to be operational by 2100UTC on the 6th of December, for three days.

Further information, regarding bands, modes and a handsome award, that is available, may be obtained from the QSL Manager, Ricardo CX2CS, PO Box 2063, Montevideo, Uruguay. A SAE and 2 IRCS should suffice.

TIME CHANGE

I had the pleasure of catching up with Dave ZL1AMN and his XYL, Aola ZL1ALE, who by the time you read this, will have returned from a jaunt to South East Asia.

Dave as a NZART Councillor has taken on the onerous task of co-ordinating, and being the custodian of, the special prefix of ZM6ARU, which will be aired on different dates to those previously published. Operation of ZM6ARU, a special call to commemorate the IARU Conference, will commence at 0001UTC on 1st November, and end at 2359UTC on the 18th November, at 2359UTC.

To further create chaos in the household, Aola has taken over the chores of being the QSL Manager, and all cards are preferred to be received via the Bureau. Aola's mail QTH is PO Box 397, Papakura, New Zealand, for those that prefer this method.

AFRICA JAUNT

The "Globetrotting Colvins" are on the move again under the YASME banner. Their hopes are to operate from, whilst visiting, the prefixes of ZS2, AA, 7P, 3D6, S8, ZE, 7Q, 9J and possibly CR6, before returning home to the United States in April, next year.

Iris and Lloyd are dedicated first class DXers, whom many have tried to emulate, but without success. I personally feel it is time that the YASME Foundation seriously considered instigating the "Colvin Award", maybe for stations that have worked them in 25 different locations on one mode, as a commencing point!

The QSL Information for YASME is PO Box 2025, Castro Valley, CA94546, USA.

For those that might agree with my sentiments, re award, please drop a line to the Secretary of YASME, Bob Vallo W6RGG, expressing your views !

RECIPROCAL AGREEMENT

A reciprocal agreement has been signed between the USA and Japan allowing amateurs, whilst visiting, to operate without further testing. The call sign allocation in JA, is from the block 8N1AAA-8N1XZZ. It seems the FCC will use their present arrangement for visitors.

Apparently the USA are the first to implement reciprocal rights, of a number of countries, contemplating an agreement.

MOUNT ATHOS

Unfortunately, the Mount Athos discussion is still being continued and the mail to overseas Newsletters and the ARRL, shows that quite a lot of the exponents of DXing are concerned with the "fiasco" that has been caused by a few unscrupulous operators.

Bob Read who was signing SV0BVIA, and has a number of other calls attributed to his name, has



AMSAT AUSTRALIA

Colin Hurst VK5HI

8 Arndell Road, Salisbury Park, SA 5109

SATELLITE ACTIVITY FOR PERIOD 30 JUNE TO 29 JULY 1985.

1. LAUNCHES.

The following Launching Announcements have been received:-

1985-055A	Intelsat-VA-11	Jun 30	ITSO
1985-056A	Giotto	Jul 2	ESA
1985-057A	Cosmos 1665	Jul 3	USSR
1985-058A	Cosmos 1666	Jul 8	USSR
1985-059A	Cosmos 1667	Jul 10	USSR
1985-060A	Cosmos 1668	Jul 15	USSR
1985-061A	Molniya 3-25	Jul 17	USSR
1985-062A	Cosmos 1669	Jul 19	USSR
1985-063A	STS 51F	Jul 29	USA
1985-063B	Plasma Diag. Package	Jul 29	USA

STS 51F with a Plasma Diagnostics Package was launched using the Challenger spacecraft from Kennedy Space Centre on July 29. Orbit elements were period 90.9 min., inclination 49.5°, apogee 321 km, perigee 312 km.

On board were C.G.Fullerton, R.D.Bridges, F.S.Musgrave, A.W.England, K.G.Heinze, L.W.Anton, and J.D.Bartoe.

The spacecraft carried Spacelab-2 and a free flying Plasma Diagnostics Package which is deployed and retrieved using the remote manipulator system.

Amateur Radio including SSTV, was operated by Tony England WOORE and John-David Bartoe W4NYZ.

2. RETURNS.

During the period fiftysix objects decayed including the following satellites:-

1985-051A	Progress 24	Jul 15
1985-052A	Cosmos 1663	Jul 5
1985-054A	Cosmos 1664	Jul 5
1985-057A	Cosmos 1665	Jul 17
1985-059A	Cosmos 1667	Jul 17
1985-060A	Cosmos 1668	Jul 29

3. GENERAL.

1966-100A ATS 1 . As at July 7, 1985 1637 UTC, ATS 1 was located at 146.130°East. Inclination 11.767°.

NATIONAL CO-ORDINATOR

Graham Batchelor VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA

Control: VK5AGR

Amateur Checkin: 0945 UTC Sunday

Bulletin Commences: 1000 UTC

Winter: 3.685 MHz Summer: 7.064 MHz

AMSAT PACIFIC

Control: JATANG

7100 UTC Sunday

14.305 MHz

AMSAT SW PACIFIC

2200 UTC Saturday

21.280/28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from Bob VK3ZBB and Graham VK5AGR.

AMSAT-AUSTRALIA NEWSLETTER

Graham VK5AGR, the National Co-ordinator of AMSAT-Australia, is now producing a monthly newsletter containing updated satellite news, orbital predictions, keplerian data and operating hints and techniques. The objectives of the newsletter are to keep the amateur populous informed on the latest information available, and to raise funds for the funding of projects or the purchase of an item/items of hardware for a future amateur satellite project, eg: Phase-3C, Phase 4 or whatever. The cost of the newsletter is \$15 and cheques should be made payable to the WIA (SA Division) and forwarded to Graham VK5AGR, QTHR.

To date, the newsletter has been a resounding success within Australia and now comments from overseas amateurs, who have received copies from friends in Australia, indicate that they would also like something similar in their own countries. The newsletter is basically an eight-page compendium of the nitty-gritties that are relevant in the short-term, items that are basically out-of-date when printed in this column, due to the six week lead-time of AR.

To date it has included some small computer programmes specifically for satellite determination, the latest telemetry blocks from OSCAR 10 and OSCARS 9 and 11. If you are at all interested in satellite communication, this newsletter is a must!

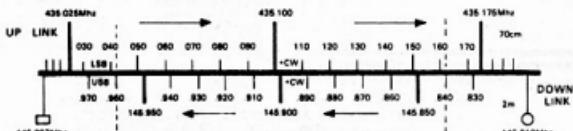
HAND-HELD COMPUTER OFFER

Perhaps one of the drawbacks of satellite communication is the ability of knowing where the satellite is and whether it is available to you. In the past, computers conjured up dollar signs in front of our eyes to the tune of some thousands of dollars. However, today the price of hand-held computers is well within the reach of us all. Although these hand-held computers are restricted in memory capacity, thus preventing the more traditional expectations of a computer, they can be of significant use if you have a specific problem to solve. Karl Meinzer DJ4ZC, the father of the Phase 3 programme, whilst in Australia, demonstrated a small hand-held computer (see August AR, page 22), utilising an excellent orbit derivation programme, based around the computer software he produced for the actual spacecraft.

This programme, utilising the Sharp PC-1246 Pocket Computer, is now available through AMSAT-Australia for \$70, including packaging and postage, as a special service to the amateur community. Bargain hunters will readily note this price is well below the listed retail price, and it also includes the software.

When forwarding you cheque, made payable to the WIA (SA Division) Inc, please include your

OSCAR TEN UP/DOWN FREQUENCIES



#GUARD LIMIT TO SPECIAL BULLETIN CHANNELS#

Please do not transmit above 435.162MHz or below 435.044MHz

AMSAT CALLING FREQUENCY 145.957

AMSAT - UK CALLING FREQUENCY 145.950

AMSAT - UK LONDON E12 SEQ ENGLAND

stations latitude and longitude so that these values can be inserted in the programme for you, by AMSAT-AUSTRALIA, and thus saving you the hassle. A complete set of operating instructions comes with the computer, plus a printout of the actual computer programme.

All that is required is to turn the computer on, insert the day and time you wish to operate from and the computer will display the time, beam headings, and mean anomaly. Then with the stroke of a single button, you can increment the display at 30 minute increments. The satellite communicators, who have purchased these units, adamantly declare that it has included a new dimension to their activities. Frank VK2ZI, an ardent satellite communicator, despite his blindness, had his unit adapted to a talking computer, and he unashamedly boasts that to him "... it is the best thing since sliced bread".

For the short term that this unit has been available from AMSAT-Australia, those amateurs who are gifted with software expertise have already included additional operating improvements to suit their respective tastes, within the limits of the memory capacity of the units.

It is interesting to note that amateurs who have full-blown computer systems prefer to use this small hand-held unit because of its more practicable operation.

Just turn it on, insert the data, and that's it!

OSCAR-10 OPERATING SCHEDULE

As mentioned in previous columns, it pays to listen to the Sunday evening session of AMSAT-Australia, to keep track of the operating schedule of OSCAR-10. The latest schedule however, is as follows:

MEAN ANOMALY	MODE
40 to 119	B
120 to 136	L
137 to 220	B
221 to 39	Off

With the passing of the latest spate of extreme eclipses for OSCAR-10, it is anticipated that this schedule may remain in force for some months to come.

AUSTRALIAN COMMAND STATION

Whilst on his recent visit to Australia, Karl DJ4ZC invited Graham VK5AGR, to act as a command station for Phase 3C, due for launch in 1986. Ian Ashley ZL1AOX, is currently the sole command station in the Southern Hemisphere for the Phase 3 programme, and as such, is heavily committed towards OSCAR-10. Command stations are one of those commodities that everyone takes for granted, however, it is perhaps one of the most demanding, and extremely responsible tasks that an amateur can impose upon himself/herself.

The commitment Ian ZL1AOX, has made to OSCAR-10 could really be re-termed sacrifice, in lieu of commitment, because, in recent months, the Northern Hemisphere command stations have seen very little of OSCAR-10 and, as such, the majority of commanding has fallen Ian, and this situation will continue for some time to come.

Consequently, the request for Graham to act as an additional command station in the Southern Hemisphere will eventually ease the burden that Ian is currently handling. It is anticipated that Graham will be attending a Command Seminar in either Marburg, West Germany or Colorado, USA later this year, to come to grips with the task that he is about to undertake, on behalf of the satellite programme. Commensurate with Graham taking up this challenge will be a dearth of technical information that has not been readily available to us in the past.

OSCAR-10 ATTITUDE PROGRAMMES

For those enthusiasts who have the means by which to receive and demodulate the PSK telemetry from OSCAR-10, and are interested in determining the attitude of OSCAR-10, Graham VK5AGR (GTHR), has a number of programmes developed by Jim Miller G3RUH, for that purpose. If at all interested, drop Graham an SASE for details.

de Colin VK5HI
AR

OSCAR-10 APOGEES NOVEMBER 1985

DAY	ORBIT	APOGEE	CO-ORDINATES	BEAM HEADINGS-----I-----							
				LAT	LON	SYDNEY	AZ	EL	ADELAIDE	AZ	EL
#	U.T.C	H:M:S	DEG	DEG	DEG	DEG	DEG	DEG	DEG	DEG	DEG
8th November											
384	1794	1833:13	-22	332							
1st November											
385	1795	0612:45	-22	147	95	27	181	16		252	5
2nd November											
386	1796	1752:16	-22	322							
386	1797	0531:45	-22	138	99	19	185	8			
386	1798	1711:16	-22	313			251	2	261	21	
3rd November											
387	1799	0450:47	-22	128	184	11	118	1			
387	1800	1638:18	-22	303	249	-8	256	18	265	29	
4th November											
388	1801	0409:47	-22	119	189	3					
388	1802	1549:18	-22	294	254	7	268	18	278	38	
5th November											
389	1804	1508:21	-22	285	258	15	265	26	275	47	
6th November											
310	1806	1427:21	-22	275	263	23	278	34	282	56	
7th November											
311	1807	1346:23	-22	266	267	32	276	43	291	65	
8th November											
312	1810	1305:23	-22	256	273	48	262	52	288	73	
9th November											
313	1812	1224:26	-22	247	279	49	292	68	344	78	
10th November											
314	1814	1143:26	-23	238	287	58	386	68	33	77	
11th November											
315	1816	1182:29	-23	228	298	66	332	74	68	78	
12th November											
316	1818	1021:28	-23	219	319	73	11	76	74	62	
13th November											
317	1820	0948:31	-23	218	357	77	44	71	82	53	
14th November											
318	1822	0859:31	-23	208	37	74	63	64	88	44	
15th November											
319	1824	0818:34	-23	191	68	67	74	56	93	35	
16th November											
320	1826	0737:34	-23	181	73	59	82	47	97	26	
17th November											
321	1828	0656:36	-23	172	81	58	88	39	182	18	
18th November											
322	1830	0617:03	-23	163	87	42	94	38	186	18	
322	1831	1756:34	-23	338					248	9	
19th November											
323	1832	0536:06	-23	153	93	33	99	22	118	2	
323	1833	1715:34	-23	329					253	9	
20th November											
324	1834	0455:06	-23	144	98	25	183	14			
324	1835	1634:37	-23	319			247	-2	257	16	
21st November											
325	1836	0414:08	-23	134	182	17	198	7			
325	1837	1553:37	-23	318			251	6	261	24	
22nd November											
326	1838	0333:08	-23	125	187	9	113	-1			
326	1839	1512:39	-23	308	250	3	256	13	265	33	
23rd November											
327	1840	0252:11	-23	116	111	2					
327	1841	1431:39	-23	291	254	18	261	21	278	41	
24th November											
328	1843	1358:42	-23	282	258	18	265	29	275	58	
25th November											
329	1845	1309:42	-23	272	263	26	278	38	282	59	
26th November											
330	1847	1228:44	-24	263	268	35	276	46	293	68	
27th November											
331	1849	1147:47	-24	253	273	44	283	55	314	76	
28th November											
332	1851	1106:47	-24	244	279	52	293	64	1	88	
29th November											
333	1853	1025:58	-24	235	268	61	318	71	48	76	
30th November											
334	1855	0944:49	-24	225	301	69	342	76	68	68	

OSCAR-10 APOGEES DECEMBER 1985

DAY	ORBIT	APOGEE	CO-ORDINATES	BEAM HEADINGS-----I-----							
				LAT	LON	SYDNEY	AZ	EL	ADELAIDE	AZ	EL
#	U.T.C	H:M:S	DEG	DEG	DEG	DEG	DEG	DEG	DEG	DEG	DEG
1st December											
335	1857	0903:52	-24	216	327	76	25	76	79	59	

2nd December	336 1959 0822:52	-24	286	12	78	54	78	86	58
3rd December	337 1961 0741:55	-24	197	49	73	69	62	91	41
4th December	338 1963 0708:54	-24	188	67	65	79	54	96	33
5th December	339 1965 0619:57	-24	178	78	57	86	45	100	24
6th December	340 1967 0538:57	-24	169	85	48	91	36	104	16
7th December	341 1969 0456:08	-24	159	91	39	96	28	108	8
341 1970 1637:28	-24	335						249	3
8th December	342 1971 0417:08	-24	158	95	31	101	28	113	8
342 1972 1557:08	-24	325						253	11
9th December	343 1973 0337:29	-24	141	100	23	106	12		
343 1974 1516:58	-24	316				247	1	257	19
10th December	344 1975 0256:29	-24	131	105	15	118	5		
344 1976 1436:08	-24	307	246	-2	252	9	261		27
11th December	345 1977 0215:32	-24	122	109	7	115	-2		
345 1978 1355:08	-24	297	258	6	237	16	265		36
12th December	346 1979 0134:32	-24	113	114	-8				
346 1980 1314:03	-24	288	255	13	261	24	278		45
13th December	347 1982 1233:03	-24	278	259	21	266	33	275	54
14th December	348 1984 1152:05	-24	269	263	38	271	41	283	63



JUMPER LEADS DANGEROUS

The makers of most jumper leads tested recently by the Australian Automobile Association (AAA) were failures when it came to the practical use of ohms law.

Only four of 44 cables subjected to tests were considered acceptable in terms of their electrical capacity needed to start a six cylinder engine.

The AAA recommended that only cables with a 100A or greater capacity should be used to start a car with a flat battery. The testing included passing 100A through the cables for four six-minute periods, with cooling in between, and a mechanical strength test of 25kg.

These tests are in the Australian Standard AS 2697 of 1984 . . . which was drafted as a result of reports of injury and damage caused by inadequate cables. During AAA testing of electrical capacity, the plastic insulation on many of the cables melted because they could not carry 100A. Thick insulation on the cables, in some cases, gave the appearance of them being heavy duty.

The mechanical test revealed bad wire-to-clamp connection which also led to overheating and failure to the cable.

The AAA said none of the 44 cables tested claimed to meet the AS 2697 standard, and one of the four which passed its test was slightly shorter than the standard's recommended minimum 2.7 metres length.

Contributed by Jim Linton VK3JP

WAVERLEY AMATEUR RADIO CLUB

The Waverley ARC celebrated the 65th Anniversary of the granting of an Experimental Licence by the then Department of the Navy on 18th August 1920, the Waverley Club having been formed in March 1919.

With the granting of Licence Number 249, the club was allowed to transmit and receive Morse code on 200 metres with 250 watts, spark transmission. The annual licence fee was two pounds, later reduced to one pound in 1923.

In June 1921 permission was given to transmit radio telephony on 1,000 to 1,500 metres, as it was considered that radio telephony on 200 metres was impractical. The reception of voice and music, in a public hall in Coogee, NSW, from the club radio station, took place on 22nd September 1922. During 1923, the call of 2BV was issued, instead of using the number of the licence issued to the club, namely N249.

In that same year, broadcasts of concerts at St Lukes Church, Clovelly, NSW, were permitted. The club was allowed to transmit on the 90 metre band in 1925, and in 1926 additional bands were authorised, namely 85 to 95 metres, 32 to 37 metres, 21 to 23 metres and 8 to 10 metres. In 1928, the club was allowed to transmit telephony between 125 and 250 metres with a power of ten watts.

1926 saw the club's call change to A2BV, then in 1930 the present prefix was allocated which resulted in VK2BV with a licence fee of 30 shillings. The club's members were very active when approval was given to conduct television experiments in the 56-60MHz band with the proviso that no commercialisation on the transmissions would be allowed. THIS WAS IN 1935!!!!

The club's call sign was re-activated after WWII on 21st August 1946 and has been active ever since. The club also activated the repeater VK2RBV between December 1975 and June 1978.

The Waverley Amateur Radio Club is the oldest radio club in Australia and has had the continuity of licence for 65 years.

Contributed by Duane Foster VK2VE, Patron of the Waverley Amateur Radio Club.

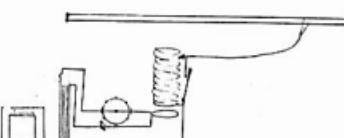
AR

DEPARTMENT OF THE NAVY.

Details of Proposed Experimental Wireless Station (TRANSMITTING ONLY)

I Type	Horizontal loop aerial fed long, lead down 20 ft long. in line fed
Overall Length	60 ft
Antenna	One wire elevated 10 ft off top, about one foot apart
Wattage of Primary Power	240 watts per cycle, alternating current, no supply or receiving coil by 100 volt dynamo.
Transformer, Ratio of Winding	Primary, giving 50000 volts, secondary unknown. Primary taking 200 milli amperes at approximately 100 volts.
Spark Gap, Type of	Hollow iron gap, enclosed, kept elevated to such a height above the ground as to be safe.
Particulars of Transmitting Oscillator	Oscillator made from 512 in the front of the antenna frame, 512 in the back, a distance of 10 ft with a small gap in each end.
Capacity of Condenser	Two plates 12" x 12" by 1/8" spaced with lead 10" x 12" - capacity about 100 microfarads in all.
Form of Coupling	Inductively coupled
Particulars of Earth Connection	Wire goes to a electrode about 100 ft from ground and connected made by 10 gauge wire, manhole branch.

Sketch of Aerial and Diagram of Proposed Circuits.





SPOTLIGHT

ON SWING

Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

I recently recalled the numerous occasions when I came across low-powered signals on the bottom edge of 40 metres. These were broadcasting in Indo-Chinese languages. What sparked off the reminiscences was the television tribute to fellow Tasmanian Cine-cameraman, Neil Davis, who was tragically killed in fighting in an abortive Thai Coup. These weak signals were usually around 7.006MHz, but it was extremely difficult identifying them as they were under-modulated and there was considerable frequency instability, also. These were the stations of the Viet Cong or National Liberation Front.

I do recall one night in September 1974, hearing a station in Vietnamese on 7.021MHz, around 1300UTC. I obtained complete identification with plenty of martial music. This was after foreign assistance had withdrawn, leaving South Vietnamese to do the bulk of the fighting.

HOME SERVICE LOUDER

As well, the Voice of Vietnam, from Hanoi, was often heard in English at 1000 and 1100UTC, very close to WWV's frequency. It broadcast the names of US POWs and had occasional interviews, in English, which were heavily edited. Today, the Voice of Vietnam can still be heard on 9.840MHz, at 1000 and 1100UTC, in English. However, their Home Service outlet is on 10.059MHz. In Vietnamese, is much louder than the Foreign Service outlets. There is also a very strong MW outlet on 680kHz, which I hear daily. This is very surprising, as they reputedly utilise a 500kW sender. Listen around 1200UTC and you will have no difficulty copying it. It is the same programme as on 10.059MHz.

There are a number of low-powered provincial stations wandering about 6.600MHz, in mostly minority languages. They are particularly noted for their abrupt frequency hopping. This is presumably because they are using ex-military senders, captured from the Americans, which employed rapid frequency alteration techniques.

PRESENCE HAS DIMINISHED

In the late-60s/early-70s, it was quite common to hear US Military traffic to and from Guam, Clark AFB (near Manila), and South Vietnam. They were heard around 8.900-0.050MHz almost continuously, and also around 6.700MHz. Today the amount of US Military air traffic is only a fraction of what it was at the peak of the Vietnamese war, as the American presence within the region has diminished. Most of the communication is now, probably, routed via satellites and cable from VHF/UHF channels.

Somehow, I was never able to hear the South Vietnamese radio from Saigon, as they were lost within the crowded allocations, underneath more powerful competitors. Today, Saigon has been renamed Ho Chi Minh City, and I have, surprisingly, observed it on 610kHz, after the Brisbane ABC station, on 612kHz, closes down at 1402UTC.

AUDIBLE IN VK

While there is an absence of any clandestine broadcasting in Vietnamese, the same cannot be said for nearby Kampuchea, especially since it was invaded and the Pol Pot was overthrown. The Chinese have provided the Khmer Rouge with a sender, which is easily audible here, in Australia. The two frequencies to try, at 0930UTC, are 15.135MHz or 1.680MHz. Broadcasts are exclusively in the Khmer language. There were other Khmer clandestine stations of other resistance groups, which were tiny, but these have virtually disappeared since the Vietnamese launched an offensive in Easter of this year and drove them to find sanctuary, in Thailand.

The same Chinese site used for the Khmer Rouge programmes was also utilised by Malayan communist guerrillas in their clandestine broad-

casts. The base was located at Kunming and was on the non-standard channel of 15.880MHz, which made it easily heard during the evening hours. Programmes were in English, Chinese, and Bahasa Malay. But, since the Chinese began cultivating relationships with Malaysia and Singapore, the guerrillas have lost their facilities and been forced to commence broadcasting from their bases, located near the Thai-Malaysian border. The Intruder Watch noticed the appearance of a low powered signal around 7.075MHz up until last year. There have been reported joint operations by Thai and Malaysian security forces in the border jungles, which have virtually nullified the guerrillas and the senders have not been heard since.

VUNC

Another unusual station, I also recall observing, was the Voice of the United Nations' Command (VUNC), based in South Korea. This was a hangover from the Korean War in the 50s, and had programming in Korean. They were also on an unusual frequency of 14.870MHz, which made it audible in the evening hours. The station was deactivated in the late-60s or early-70s.

Looking back in my log book of 10 years or more ago, I came across a logging on 3.668MHz, around 1200UTC. The station was in language similar to Spanish and had pop music, plus commercials. Audio was on the upper side of the carrier. The station was, in fact, located in Dili, Portuguese Timor, which meant that the language was Portuguese, of course. I first came across it in September 1974, and it was some time before I was able to find out where it was operating from. In November 1975, Indonesia invaded the Portuguese colony and the original transmitters were destroyed. Dili today is heard down at the bottom edge of the 90 metre tropical allocation, as part of the Radio Republik Indonesia (RRI) network.

INTRUDERS A DECADE LATER

While glancing at the log book of a decade ago, I noticed, to my chagrin, that several intruders remained, and still operating today on the same channels, or very close to them. For example, the Chinese domestic network on 7.095MHz is still coming in very loudly, as it did in 1973, although it has switched networks. The semi-clandestine Fujian Front Station is still on 7.025MHz, in various Chinese dialects, beamed to Taiwan, although the station's call is Haixia or Voice of the Straits. It also has been heard on 3.640 and 3.535MHz, in the Northern Winters. And, of course, Radio Tirana is still on 7.065 and 7.090MHz in various European languages, as they were then. So, nothing appears to have significantly altered.

Upon reflection, I can safely state that the bands have become more congested today, compared to 10-15 years ago. More nations have acquired 100, 250 or 500kW transmitters. The amount of deliberate interference or jamming has also increased as well, with adjacent channels suffering from the resulting degradation. If you look at the frequency occupancy charts today and compare them to 15 years previously, one can readily appreciate how congested the international broadcasting allocations have become. A decade or more ago, there were only a handful of stations broadcasting outside the recognised allocations. Today however, the various broadcasters have begun to crawl out alarmingly from the standard allocations, to attempt to get a clear channel. The channelling of much telecommunications traffic onto satellite and cable has assisted in this, although a significant number of developing nations still utilise HF, as it is more economical.

With the trough of the cycle at present, it is easy

to speculate if we will return to the exceptional conditions we experienced in 1979-80. Is propagation more unreliable today than it was 10 or 15 years ago? Today the science of propagation has been advanced considerably, by extensive space exploration. I think that despite the inconvenience and disruption caused by blackouts, we can more safely predict when disturbances are likely to occur, than we could a decade or more ago.

MASIRAH ISLAND

I do note on the BBC schedule for October, that they will be experimenting with the Masirah Island Relay Base to broadcast to Australasia. This has been tried out because of the strong signals coming into the region from UAE Radio in Dubai. So they will be using 21.550MHz from 0600 until 0800UTC, with the World Service. As well, 7.150MHz will be on from 0700 until 0915UTC. 15.070MHz is on from 0600 until 0800UTC and again through the local evening hours.

Well, that is all for this month. Until next time, the very best of 73 and good listening — Robin VK7RH.

ANDREWS CORRECTION

The following prices were incorrect in the Andrews Communication Systems advertisement, page 26, October AR.
Tokyo Hy-Power HL-85V — \$249
Tokyo Hy-Power HL-62V — \$219
Tokyo Hy-Power HL-35V — \$149

75th Nostalgia!

THE MORSE CODE AND ITS USE

or How to learn Morse 1898 style!

SIGNALLING is accomplished by sending long or short groups of wave-trains in certain recognisable sequences, the arrangement being different for each letter of the alphabet.

A momentary depression of the signalling key constitutes a dot, and this consists of short groups of sparks, each which sends out a train of waves to the distant receiver; if the key is held down for longer, a dash or long group of wave-trains is produced.

Each letter or other sign is made up of dots and dashes and the letters are distinguished from each other by longer periods of rest than those given between signals which make up the letter.

The beginner is advised to transmit various letters in continuous repetition for three or four minutes each, until the person at the receiving end is thoroughly used to reading them.

V is a clear and useful letter to send while adjustments are being made at the receiving station.

Until the operators are thoroughly familiar with the different signals, it is well for all messages to be written on a piece of paper in the Morse code and transmitted while the sender reads from this paper.

Similarly, the receiving operator should write down, in properly spaced dots and dashes, all that he receives, interpreting it at his leisure, when the signals have ceased.

Any hesitation while the signals for letters are hunted for in a book will lead to hopeless confusion and spontaneous messages sent as they come to mind, should not be attempted until thorough proficiency has been attained.

Dots should be sharp and crisp, and dashes should be long enough to give them clear distinction.

Uniformity of dots, dashes, and spacings should be aimed at; signals should be sent slowly at first, the speed being increased as the code becomes familiar.

Is it not marvellous, that Morse code is still a major reliable means of communication in 1985. The above was compiled by Peter Alexander VK7AR an early exponent of the art, and was the winner of the WIA 75th Anniversary CW Contest. The extract is from WIRELESS TELEGRAPHY FOR AMATEURS by R.P. Howgrave-Graham (Associate member of the Institution of Electrical Engineers). Published in London in 1988.



AWARDS

FRASER VALLEY DX CLUB AWARD — VE7DXC

DX stations are required to work five members of the club to qualify for this award. Cost is US\$1.00 or 5 IRCS.

Send log information only showing Date, Time, Call Sign, Name and Frequency to: The Awards Manager, Box 3112, Langley, BC, Canada, V3A 4R3.

FVDXC members are: VE1LD, VE7e — AB, ADC, AFY, AIO, AKH, AKR, AUF, AVA, AVC, AZA, AZQ, BFO, BGV, BIM, BTW, CBH, CC, CEM, CFC, CGM, CIK, CJO, CGJ, CJK, CMF, CMY, CMZ, CPT, CVM, CXC, CXN, CZS, DLM, EXE, HV, IN, SZ, TT, WJ, XO, YD, YJ, YQ, VE8DX.

The "VE7BIP" is now VE7YL.

KO7GX, NTR0, W7A — EKM, ISX, MBY, SFF, WAT7 — YCZ, ZWG, WB7s — CAO, CLU, VXR, WQE and YV5HLK.

KDXA BUFFALO AWARD

The KDXA logo is the American buffalo, the official State animal of Kansas. In the early days, the American buffalo numbered millions and roamed free in large herds on the Kansas prairies. The logo outline represents the Kansas State Boundary.

This beautiful award is offered to DX stations outside the Continental USA.

RULES:

DX stations shall work 20 Kansas stations plus five KDXA members.

Contacts on or after 1st September 1980, qualify for the award.

Use of any amateur band or mode.

Applicants shall submit normal log information. QSL cards are not required.

SWLs shall submit log information of stations heard.

Applications shall be sent, together with 4IRCs or US\$2.00, to KDXA, Box 454, Salina, Kansas, 67401, USA.

KDXA will supply a current membership list upon receipt of an SAE and 1 IRC.

INDONESIAN AWARDS

ORARI, representing the Republic of Indonesia, and CRSA representing the People's Republic of China were admitted to the membership of the IARU, Region 3, in September 1984.

The ORARI has a membership of 40 000, only one percent of these being DXers. However, an upgrading programme hopes to increase this number to 10 or 20 percent.

YB0BZZ, previously the Secretary of the Society, is now in charge of the NCDX Awards Bureau. A letter written by him to K6UD states:

"For your information, by law, all amateurs have to become a member of ORARI (Organisasi Amatir Radio Indonesia), there are no individual amateurs. Everyone should be under the district and regional sections of ORARI, but we do have problems also, due to our geographical situation, which consists mostly of islands. It is as wide as from the west to east coasts of the USA, therefore a get-together between the Regional Committees is only possible through radio. We in Jakarta, the capital city which is the O call area, together with the National Committee, will always be the barometer throughout the country."

Acknowledgment to the NCDX Newsletter.

The ORARI awards programme is shown below, with rules only, as there are no sample copies of the awards.

The "Jakarta Award" (JA/SWI-JA) is for confirmed contacts with, or having heard from, 20 licensed amateurs, including at least one club station, in Jakarta, (O call area only), the capital of the Republic of Indonesia. Apply to M S Lumban Gaol, YB0WR, Box 96, Jakarta, 10002, Indonesia. Club stations are: YB0s — ZAA, ZAB, ZAD, ZAE, ZAF, ZBA, ZBB, ZCA, ZCB, ZCD, ZCE, ZDB, ZDC, ZDD, ZDE, ZDG, ZEA, ZEE and ZZ.

The "Worked all Indonesian Award" (WAIA/ SWL-WAIA) for two confirmed contacts in each call area with, or having heard from, licensed amateurs in each of the Indonesian call areas, total 20 contacts. The Awards Manager is, Mr M Maruto, YB0TK, Box 96, Jakarta, 10002, Indonesia.

The "Worked the Equator Award" (WEA/ SWL-WEA) for confirmed contacts with, or having heard from, licensed amateurs in countries along the equator. The countries are: C2, HC, HC8, HK, KH1, KB6, PP-PY, PY0 (St Peter), S9 (Sao Tome), T30, T31, T32, TN, TR, YB5, YB7, YB8, 5X, 5Z, 6G, 8Q and 9Q. The WEA will be issued in three classes, i.e.

Class 1 — For confirmed contacts with 15 countries

Class 2 — For confirmed contacts with 12 countries

Class 3 — For confirmed contacts with eight countries

All classes must contact YB5, YB7 and YB8.

The Awards Manager is Ben S Samso YC0EBS, Box 96, Jakarta, 10002, Indonesia

GENERAL RULES:

ORARI Awards will be issued to licensed amateurs for two-way SSB, CW, RTTY, mixed or single mode, mixed or single band in the 80, 40, 20, 15, and 10 metre bands, only. SWL Awards in the same category will also be available.

The applicant may request endorsements for such distinctions accordingly.

All contacts on or after 9th July 1988, will be valid for these awards.

Claims must be accompanied by a QSL card list (GCR) furnished with the call sign of the stations worked, dates, bands and modes of contacts, meeting the requirements of the award concerned.

Rules and requirements will be specified, when required, in each of the awards programmes.

QSL card list must be accompanied by a statement from the applicants National Society, Club Station, or from any two amateurs, other than the applicant, that the QSL cards of the contacts listed are in the possession of the applicant, and that the items of the cards are correctly listed.

A fee of US\$8.00 or 16 IRCS should accompany the Award application to the respective award manager.

Only contacts with land stations within the same country will be accepted.

IDX — ISLAND DX AWARD

This award is sponsored by the Whidbey Island DX Club, and is available to all licensed amateurs and SWLs on a heard basis.

Awards are issued for two-way SSB, CW, RTTY, SSTV, as well as mixed and single band accomplishments.

The basic award requires 50 IDX Islands. Endorsements are given in increments of 50 Islands, up to and including the maximum number of Islands possible.



Joe Ackerman, VK4AIX
5 Keemooleo Court, Mermaid Waters, Qld 4218

All DXCC Countries which are bona fide "islands" are the only qualifying contacts.

To be valid, all contacts must be made AFTER 1st October 1977.

To apply, prepare a list of contacts in prefix order. PLEASE NUMBER YOUR CONTACTS 1 through 50 etc. Include the call sign of the station worked, IDX Island's name, band, mode, date and UTC.

DO NOT SEND QSL CARDS!! Have your list verified by two amateurs or local radio club officials. Confirmation of each contact must be in the applicants possession and confirmed by verifying signatures.

Send verified list with US\$4.00 or 12 IRCS and a 10 x 229mm business size, SASE to the following address: Whidbey Island DX Club, 2665 North Bushy Road, Oak Harbour, Washington, 98277 USA.

Rules governing this award are reviewed annually. Please enclose an SASE with any inquiries regarding this award.

NWIRA — TEN METRES FM AWARDS

This award is sponsored by the North Whidbey Island Repeaters Association.

All contacts, to be valid, must be made on or after 1st January 1981.

Cross mode contacts do not count. Contacts must be two-way 10 metre FM.

Special endorsements include All Mobile, All Simplex, Single Frequency accomplishments and contacts made within a Single Day, Week, Month or Year.



DO NOT SEND QSL cards. Forward your list of contacts showing date, time and frequency, of each contact and provide a brief station description.

Send the list of contacts, together with US\$4.00 for each award to: The 10 Metres Awards Programme, 2665 North Bushy Road, Oak Harbour, Washington, 98277, USA.

WORKED ALL DISTRICTS AWARD: Applicants must work one 10 metre station in each of the US Call Districts.

WORKED ALL STATES AWARDS: Applicants must work a MINIMUM of 50 US States on 10 metres FM.

CENTURION AWARD: This Award requires the applicant to work a MINIMUM of 100 stations on 10 metres FM.

DX DECADE AWARD: Applicants must work a MINIMUM of 10 DX stations outside the 50 US States and Canada on 10 metres FM.

NORTH AMERICAN AWARD: To qualify, applicants must work all 10 US Call Districts, a MINIMUM of six Canadian Provinces and/or Territories and at least four DX Countries within the North American continent (other than the US and Canada) on 10 metres FM.

Members of the NWIRA monitor 29.600MHz and also the area repeater on 29.640MHz (an 1800Hz tone or whistle is required to access it).

NZ CHAPTER NO 3 AWARDS PROGRAMME

The are many fine awards available from the

LA BALSA AWARD

The La Balsa Expedition, consisting of 3 rafts constructed entirely of balsa logs fastened with wooden pegs and sisal ropes, under the command of Vital Alisar and 11 other men of different nationalities and languages departed from



Guayaquil on 27/5/73 and drifted 13,760 kms in 178 days to reach Ballina on 21/11/73. Radio communication was maintained by amateur radio with several operators including the late VK2PF, a prominent Summerland Amateur.

PRESENTED BY THE SUMMERLAND AMATEUR RADIO CLUB

TO
FOR HAVING WORKED THE REQUIRED NUMBER OF CLUB MEMBERS
AWARD No. DATE
AWARDS' MANAGER PRESIDENT
ENDORSEMENTS



SUPPORT THE AUSTRALIAN VOLUNTEER COAST GUARD

New Zealand Chapter of the Certificate Hunters' Club, for a reasonable fee. There are too many to list in these columns but an SASE to Evan P Tombs ZL2IG, Ihakara, RD1, Levin, NZ, will provide all the information necessary for those interested.

PAPAKURA JUBILEE AWARD

This award is sponsored by the Papakura Branch of the NZART and is available to amateurs and SWLs until the end of November 1985.

REQUIREMENTS:

Six contacts to be made with Branch members, one contact with the Club station ZL1VK, or with one YL Branch member, is obligatory.

Contacts may be made on any amateur band and/or any mode. Nets are held on the frequencies from 3.580-3.590MHz.

Application to be forwarded to: Awards Custodian, P O Box 397, Papakura, New Zealand.

Fee for the award is \$2.00 and the log extract must be certified by another amateur.

LA BALSA AWARD

This award is presented by the Summerland Amateur Radio Club to commemorate the crossing of the Pacific by three balsa rafts.

The Club Station, VK2AGH, counts as five points, members count one point.

A Club Net is held each Friday night at 0800UTC on 3.605MHz.

Applications, together with log extract and fee of \$2.00, to be forwarded to: The Awards Manager, P O Box 524, Lismore, NSW, 2480.

AR

MOROKULIEN AWARD

Morokulien, a Swedish-Norwegian border district, is a monument for peace between Sweden and Norway and was founded in 1914 in memory of 100 years of peace between the two countries. It has been proclaimed a free state and has its own flag.

Morokulien has its own permanent broadcasting station for radio amateurs. It was opened in 1968 and has the call signs, LG5LG in Norway and SJ9WL in Sweden.

The station has an award which is available to licensed amateurs and SWLs.

Contacts after July 1985 are valid for this award. It is not necessary to send QSL cards. A list showing full details is sufficient.

The award is issued for all modes of transmission which are permissible in Morokulien. The fee for the award is 15 Nkr, \$3 or 10 ICRs.

To qualify for the award the call signs LG5LG and SJ9WL/SK9WL must be contacted on one band but on different days.

All applications to be sent to: *Ulf A Strandberg LA22N, Kongevegen 3, N-2200 Kongsvinger, Norway*.

For philatelists, the Swedish-Norwegian Post Office has its own post mark and it is possible to mix the stamps from two countries on one letter.

AR

MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

G General, C Constructional, P Practical without detailed constructional information T Theoretical, N Of particular interest to the Novice X Computer programme

BREAK-IN . . . JULY 1985. Conference Reports (G) VHF COMMUNICATIONS . . . 1/1985. Home-made UHF Attenuators (P) 2.3GHz Prescaler (P) Index for 1984

G ST . . . JULY 1985. Packet Radio (G) Amateur Station Equipment (N) Moonbounce (G)

CQ . . . JUNE 1985. Special VHF Issue. CQ . . . JULY 1985. DXpeditioning.

73 MAGAZINE . . . SEPTEMBER 1985. Issue No 300. The CDD Antenna (P) SWR (G/N) Exponential-Line Antenna Matching (P)

HAM RADAR . . . JULY 1985. Annual VHF-UHF Edition. Microwave VCO (C) Propagation Curve Computer Programme (X) Weaver Modulation (P)

WORLD RADIO . . . AUGUST 1985. General news of Amateur Activities in the USA and International News. AR

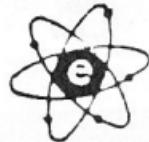


FURTHER TO . . .

Further to the ZM6ARU station, operational in New Zealand for the Sixth Conference of the IARU, the dates of operation of the station have been extended. Operation will now be from 1st November to 18th November 1985, all bands, all modes. Watch for this station to be eligible for the IARU Region 3 Conference Award. Further information, page 49 — September AR.



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CWR-670E Telereader Receive Only. The compact, multi-mode CWR-670E Receiver operates conveniently with display and/or printing equipment.

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ANTENNA BAFFLES

KUAFUHAN 11 BW for dipoles	139	TOYO T850 250W 100MHz	199	TEFT-104 1m broad band beam	199
HOKUDEN HS-5811 1W for dipoles	139	OTI951 151W 100MHz	199	EHS & POWER METTER	1850
SCALAR A-1 1W for beams & dipoles	139	OTI951 151W 100MHz	199	SP-600 1.6-500MHz	199
SCALAR A-1 1W for beams & dipoles	139	SP-150 1.6-500MHz	199	SP-150 1.6-500MHz	199
SCALAR A-1 1W for beams & dipoles	139	DOGACHE T100 75mm ring	150	SP-15M 1.6-500MHz	199
SCALAR A-1 1W for beams & dipoles	139	DOGACHE T100 75mm ring	150	SP-10K 142-270MHz	199
EMTRON ESR 1000-A 1W 1000W for ant funcs	145	TET-101 1m broad band beam	199	SP-10K 142-270MHz	199
EMTRON ESR 9300-A 41 1000W for ant funcs	145	TET-101 3el 1m broad band beam	199	SP-10K 142-270MHz	199

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EMTRONICS



ALARA

Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER FOR ALARA
PO Box 22, Yeoval, Vic. 2868



VK5 YLs enjoying their Birthday Get-Together. Standing from left — Marlene VK5QO, Linda VK5QP, Lorraine VK5LM and Vicki VK5FK.
Seated from left — Elaine VK5KEB, Judy VK5BYL, Pauline Cohen, Marlene VK2KFQ and Janet VK5NEI.



Rear from left — Carol VK5PWA, Jenny VK5ANW and Meg VK5AOV.
Front from left — Liz VK5NES, Liz's mother, Denise VK5YL, Joy VK5YJ and Myrna VK5YW.



L-R: Wendy VK4BSQ, Bev VK6DE, Wendy VK4NWT, Val VK4VR, Cecily VK4QW, Eleanor VK4BEM, Chris VK4ABM, Margaret VK4AOE, Darleen WD5FOX, Dorothy VK4NAM, Josie VK4VAN and Jill VK4ASK.



Redcliffe, 27th July 1985. John VK4QA congratulates Margaret VK4AOE on the Tenth Birthday of ALARA.

The first thing I would like to do, is taking over the reins as Publicity Officer from Margaret VK3DML, is to thank my predecessor, who has worked so conscientiously for the past six years, and to wish her well with her studies.

We are grateful to you, Margaret, for all your willing work.

You've done the job so competently, and not been one to shirk.

There is no doubt your 'track record' will be quite hard to beat.

And I hope, as I step in your shoes, that I won't get COLD FEET!

Thanks also to Jenny VK5ANW, Poppy VK6YF and Margaret VK4AOE for holding the fort as

"Guest" writers over the past three months. Your efforts were most appreciated, and, I'm sure, were enjoyed by all.

Thanks are also due to Marlene VK5QO, who designed the special cover of our Birthday Newsletter; Valda VK3DVT for the ALARA Award Birthday Stickers, and Margaret VK4AOE for the beautifully embroidered table centre. Truly, we have some very talented ladies in ALARA!

While we are sorry to lose Joyce VK2DIX, Suzanne VK2PSC and Joy VK5YJ from the committee, we appreciate all their efforts on our behalf during their terms of office.

1985 is ALARA's tenth birthday year, and there have been get-togethers to celebrate the occasion

in VK2, VK3, VK4, VK5 and VK6. Nineteen members attended the VK3 festivities, including Helene VK7HD and Pat, also five OMs. They all enjoyed themselves so much, they plan to repeat the performance annually.

A birthday mini-contest was held on YL activity day, 6th July, operating on the Novice frequencies. Unfortunately, conditions on 10 and 15 metres ranged from poor to non-existent, so most of the action was on 80 metres. The result was so close it had to be decided on the basis of time, with Kym VK3CYL winning by only one minute from Gwen VK3DYL.

Congratulations to Kym, who received the lovely table centre; and Gwen, whose prize was an

ALARA sugar spoon.

Our appreciation to all who submitted logs, and to Marlene VK2KFQ, our new Contest Manager, for getting it all together.

ALARA MINI-CONTEST RESULTS

Listed in Name/Call Sign . . . Score/No Prefixes

June L60068 — 13/6	Bron VK3NTD — 16/8
Mavis VK13KS — 20/7	Margaret VK4AOE — 19/8
Betty VK2AMU — 20/8	Jill VK4ASK — 13/5
Kym VK3CYL — 22/8	Jenny VK5ANW — 17/8
Margaret VK3DML — 16/8	Marlene VK5SQ — 21/8
Marilyn VK3DMS — 8/6	Bev VK6DE/5 — 14/6
Valda VK3DVY — 12/7	Helene VK7HD — 18/7
Gwen VK3DYL — 22/5	Pearl ZL2QY — 12/5

To the OM's who were kind enough to call, offering a contact — thanks fellas! We had to decline, as it was a YL only contest, but we will appreciate hearing from you during the ALARA contest on 9th November 1985 (UTC).

While on the subject of the ALARA Contest, let us see if we can make this tenth birthday contest the best ever! Try and get on the air, even if you can only spare a little time. It really is a lot of fun, and a very friendly contest.

Welcome to new member, Marie-Jean ON4AYL, sponsored by Marilyn VK3DMS.

Hearliest congratulations to Betty VK2AMU, ex2KYL, Margaret VK3CWA, ex3KCP, Jill VK4ASK, ex4VSK, and Eleanor VK4BEM, ex4VNS. Great to hear the new call signs.

Well, that's it for now, until next month, best wishes to all.

33/73 Joy VK2EBX

USELESS INFORMATION

The Country Fire Authority VHF radio network in Victoria comprises — 5100 mobiles, 700 base stations, 900 portables, 159 paging systems and 1500 pocket pagers.

From BARG News, August 1985.

EDUCATION NOTES



Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

I have mentioned previously that, for some time now, there has been a small committee working towards producing a Study Guide to accompany the revised Novice Syllabus. Copies of the draft have been circulated for comment to DOC and to some members, who I know, have been involved in Novice classes in recent years. By the time you read this, I hope I have the comments collated and a second draft on the way.

We have tried to produce a document which defines the depth of each topic on the syllabus, so that it can be of use to both the class instructors and the students, especially those who are unable to attend classes.

One part which still has room for further input is the list of recommended texts. I am sure there are many publications of which I am unaware, so if any readers have a favorite reference book, leaflet, article, etc, for some part of the course, I would be very pleased to hear of it. Of course, it would need to be fairly easily available if we are to recommend it in a Federal publication.

The revised syllabus is now available in leaflet form from me or from DOC State Offices, but I have not, as yet, heard when it will take effect — not that there are many changes in content.

The next step will be to prepare a similar guide for the Full Call Syllabus. Now is the chance for those who feel they have been left out of the discussion on the Novice Guide, to have their say. A soon as leaflets of the Full and Limited Syllabus are available, I will be happy to send them out for members to work on. Education Officers in each Division already have a copy.

Perhaps each club or zone could spend one meeting night on one section of the syllabus, and let me have their ideas on how far each topic

should be developed, and, perhaps more importantly, the degree of detail or knowledge that would not be acceptable for an exam question. We hope these guides will be a prescription for the examiners as much as for the examinees.

When a point of mutual agreement between DOC and the WIA is reached, the guides will be printed and made available. As soon as they are ready, I will make it known. I would expect that the Novice one should be ready for use for courses starting early in 1986, but considering the time it has taken and the greater content of the Full course, the next one is probably at least six months away — although lots of input from interested parties would probably speed it up a bit.

Again, references for the various sections would be most valuable, as the Full call course is even less well provided for than the Novice.

With the advent of Daylight Saving in some States, local time for the Education Net will vary — the Net will remain at 1130UTC Thursdays, despite everything — 3.680MHz +/- in case you're looking for it.

The Net in the Novice Band of 80 metres has been cancelled because of lack of interest. I would be pleased to have the Net used for discussion of points arising from the syllabus and the Study Guide draft. It seems to me it would be much easier to discuss ideas in a group than for you each to write me a letter — I am sure I would get more out of it too. But perhaps the easiest course of all is just not to write or talk at all.

Best wished and good luck to all those sitting for the November exam. May you all get new call signs for Christmas.

73 Brenda VK3KT



STOLEN EQUIPMENT REGISTER

The Federal Office has established a stolen equipment register. Members wishing to take advantage of this register, either to publicise their loss or to check equipment offered to them, may write or telephone the Federal Office with their queries.

Below is a complete list of all stolen equipment as notified to the Federal Office, as at 23rd September 1985. Would members notify the Office of any items listed which have been recovered.

MODEL	SERIAL NUMBER	STOLEN FROM
Yasu 101E	83G30283	VK2SS
Yasu YP150	81090469	VK2DCB
Kenwood VFO520	—	VK2DCB
Kenwood AT200	820046	VK2DCB
Kenwood TS520S	820972	VK2DCB
Kenwood DG5	730475	VK2DCB
Kenwood TR2400	0061950	VK2DCB
Icom IC498	16101152	VK3VIO
Icom IC225	15777	VK3VVO
Icom 2A	12215145	VK3CRH
Icom IC4E	18103231	VK3YOD
Icom IC45A	18351005	VK3KJC
Icom IC22A	8853	VK3ZU
Kenwood 2M	1050780	VK3YSG
Kenwood TR900	1081998	VK3YSG
Tri-Scope	10-20171	VK3YSG
Yasu FT7	81090339	VK3BYK
Yasu FRG7	289L25099	VK3ZLY
Yasu FT290R	1081321	VK3KJC
Kenwood TS930S	3050176	VK2CJ
Yasu FT480R	1148200	VK2CJ
Icom IC25A	03851	VK2DCP
Icom IC45A	01876	VK2DCP
Icom IC211	6804309	VK3BRV
Kytron FM144/10	5027	VK2KUR
Icom IC215	05156	VK2AMX

Yaesu FT209RH	4K050838	VK3C E
Has blue vinyl case		
Icom IC2A	04484	VK1MX
Yaesu FT207R	10132725	VK2EMC
Kenwood TS120V	0681224600	VK2VWN
Icom IC22	12268	VK3BLC
7EKenwood TR2400	0061928	VK2PU
*Yaesu FT708	1H01948	VK2PU
*Yaesu FT203	4H081794	—
*Yaesu 2098	4L06245	—
*Hx 2000 Regency Hand-held		
Yasu 1401-P	9-L030072	VK1ZVR
With all extra modules & cables		
*Thom BW-BV	107512	VK2XJC
Modified for computer use		
*Yaesu FT780	3F07521	VK2XJC
*Yaesu FT680R	3H08202	VK2XJC
Tokyo HL90U	8304246	VK2XJC
70cm Hi Power Amp		
*Tokyo HL160V	829331	VK2XJC
2 metre Hi Power Amp		
*Tokyo HL85T	819595	VK2XJC
6 metre Hi Power Amp		
*Kenwood TS430S	4010322	VK2XJC
Includes FM Board, AM, CW, SSB Filters, also has clip soldered to finals cage		
*Dick Smith Audio Generator	—	VK2XJC
*Dressler 2 metre Pre-Amp EVV2000	1027	VK2XJC
*Weiz SP200 SWR	600384	VK2XJC
PWM Modulator		
Saito SC7000 Scanner		VK2XJC
Has BNC connector for antenna socket		
Sharp CHA	922270	VK2XJC
Rainbow CTV	2013722	VK2XJC
National Electronics Tape Recorder	—	VK2XJC
Kenwood TR2500	3040099	VK220C
Yasu FT290R	4E380554	VK3KGH
Icom IC22S	14727	VK3ME

Kenwood TR7950	4010747	VK2TVG
Yasu FT101	34224	VK2DC
Icom IC20A	05242	VK4ZSH
Icom IC551	01273	VK4ZSH
With FM, VOX, PB Tuning Units		
Icom IC251	01106	VK4ZSH
Icom IC22A	1914	VK4ZSH
Icom IC202	5144	VK4ZSH
Yasu FT620	010489	VK4ZSH
Draka SPR4	3089	VK4ZSH
Includes 100MHz Calibrator & NB Unit		
Icom IC730	13806798	From Melbourne Uni RC, with Home Power Supply

Uniden 2020 50805009 VK2KSY
Yasu ST70 81090728 VK2KSY
DIS Explorer 70cm Transceiver. Has extensive internal mods

* Indicates units are complete with manuals.

** From Dick Smith Electronics, Box Hill.

7Ecall sign engraved on case.

If you are offered second-hand equipment, please check with the Stolen Equipment Register before purchase.

AR

TELEVISION FOR FIJI

The Pacific island nation of Fiji has decided to have a television service and it is expected to begin in 1987.

Fijian Prime Minister, Ratu Sir Kamisese said a licence had been granted to Kerry Packer's Publicity and Broadcasting Ltd (PBL), which had proposed to develop a national network in three stages.

The ultimate aim was to bring the TV service within reach of as many Fijians as possible, in every part of the country. To enable this, the government planned to speed up the availability of electricity supplies to rural areas and outlying islands.

AR SHOWCASE

330-960MHz. Additionally, three power ranges of 1.5, 7 and 15 watts are available. Other models for higher RF power are available.

Further inquiries should be directed to Vicom's offices at Melbourne, Sydney, Brisbane and Wellington or direct to Michael Bonacci, National Sales Manager, VICOM Australia Pty Ltd, Box 366, South Melbourne, Vic. 3205. Telephone (03) 62 6931.

AR

PACKET RADIO MODEM

In their continuing endeavour to promote and foster Packet Radio, the Sydney Amateur Digital Communications Group have commenced development of a complete Australian designed Amateur Packet Radio System.

Rather than enter into conflict with various groups that have purchased semi-commercial equipment, the SADCG have set their design objectives around a system that will satisfy most groups. The TNC has improved software handling both Vancouver V.2 and ARRL AX25 version 2, allowing multiple digipeating. This TNC will be available in late 1985.

Currently the SADCG have just completed the design of a high performance AFSK Radio Modem board, based on the AMD 7910 World Modem chip. This modem provides both CCITT and BELLE modem frequencies. It is tailored for use on UHF-VHF and HF voice grade channels and incorporates a PTT Watch Dog Timer. The AMD 7910 was selected because of its ability to handle noisy conditions as found on HF and satellite operations.

This modem will interface via RS-232/V.24 to a TNC or computer. It can be easily interfaced to amateur transceivers. The circuit has the option to generate a DCD signal from either the external squelch signal from the radio or internally generated DCD from the 7910, or both. Various connections are available for LED monitoring of circuit conditions, such as CTS, TXD, etc.

The Radio Modem PCB, together with construction information, is available for \$22 post free from the SADCG, PO Box 231, Frenchs Forest, NSW 2086.

AR

NEW MEASURING INSTRUMENTS

VICOM Australia Pty Ltd announce the release of a new range of RF test instruments from Fujisoku, Japan.

The range of high quality devices includes termination power meters, wideband and narrowband power meters, through-line power meters and RF power peripherals, including coaxial switches and dummy loads.

Fujisoku has been a leading manufacturer of precision instruments for more than three decades.

Further details including specifications and pricing can be obtained from VICOM offices in Melbourne, Sydney, Brisbane and Wellington or by contacting Michael Bonacci, National Sales Manager, VICOM Australia Pty Ltd, Box 366, South Melbourne, Vic. 3205. Telephone: (03) 62 6931. AR



ERROR FREE RADIO DATA MODEM

A new version of an intelligent radio data modem is now available from GFS Electronic Imports. Known as the SDX-PKT 1.2, it is designed to provide error free data communications over a standard voice bandwidth simplex radio link on HF VHF or UHF or two wire land line.

The CPU-100 simply connects between a terminal, computer or remote sensing device via their RS-232 port, and the radio transceiver. Its full error correction means that, even under loss of signal conditions, absolutely no data is lost or corrupted, the system is simply held up until the signal is recovered.

Data rate on the link is nominally 1200 BAUD, depending on the radio link quality. Exchange of data between the two communicating CPU-100's is in blocks and takes the form of an asynchronous Byte-oriented protocol. Automatic block resends are initiated for all detected errors. The radio equipment automatically switches from transmit to receive as each block of data is sent. For every received block, each Byte is checked for correct parity and framing or over-run errors. A further check sequence then calculates block validation data on the received block which must agree with the received check data contained in



NEW RF POWER METER HAS FREQUENCY COUNTER

Vicom Australia Pty Ltd has announced the release of the new Fujisoku range of termination power meters which include a built-in frequency counter.

The frequency counter has been designed for low power consumption and operates from internally mounted batteries. The counter uses a seven digit LCD.

The instruments are ideal for servicing applications due to the wide frequency range, the compact rugged construction and light weight.

Three models are available to cover the frequency ranges 0-150MHz, 30-500MHz and



that block. Only when all checks verify, is the data accepted and output to the DTE.

In its standard form, this version provides equal data transmission priority to each end of the link, ie 50 percent of link time is allocated to each DTE in turn. A higher priority to one end may be provided if it is felt necessary for a particular system, thus giving an overall increase in speed.

The flow of data from the DTE to the CPU-100 can be controlled by either XON/XOFF characters or the RS-232 hardware signal RTS. A buffer is provided in the CPU-100 to cater for any overflow data from the DTE that may occur after the unit has issued an XOFF or deactivated the RTS line to the DTE.

All data Bytes transmitted in each block are eight Bits, plus parity. This allows data over the full ASCII and Binary format range, for the transmission of target code programmes, etc, as well as normal text and control characters. A broadcast mode is also optionally available as the SDX-PKY 1.2 version of the CPU-100.

Other versions are also available. These include a full error correcting version, designed to operate over a dual channel duplex radio link, a high parity, non-error correcting type for a duplex link, as well as a one way, high parity version for a simplex radio link.

Further information can be obtained from the Australian Manufacturer, GFS Electronic Imports, Box 97, Mitcham, Vic. 3132. Telephone: (03) 873 3777.

AR

MURPHY STRIKES

The VK2 28MHz Beacon, listed on page 63 of September's AR, was incorrectly listed.

VK2WI and VK2RSY are one and the same and the frequency is 28.262MHz.

Also, on page 12, same issue, the teleprinter 7605 regulator doesn't have a ground in the circuit diagram.



INTRUDER WATCH

Well, the warmer weather is now with us and, hopefully the solar cycle has finished its fiddling about, and is heading up to where it should be! Of course, this will mean an increase in intruder activity, no doubt, and we hope that more listeners will send in their intruder reports.

REQUIRED READING

Col VK4AKX, one of the stalwarts of the IW, has drawn my attention to some interesting reading, about intruders, in a long article in "Practical Wireless" for April 1985. This makes almost required reading for any serious intruder observer, and, although the article is orientated towards the UK, there are many points germane to the VK observer.

Thanks once again to the following observers who have helped out during July 1985: Mr G H A Bradford and Vke — 2DEJ, 2EYI, 2PWS, 2PS, 2OL, 3AMD, 3XB, 3XU, 4AFA, 4AKX, 4BHJ, 4BG, 4BTW, 4KHZ, 5BF, 5GZ and 7RH.

AIRS DIRECTOR

This month sees the arrival in Sydney of Gib W7JIE, the IARU Region 2 Director of AIRS (Amateur Interference Reporting System), which the Intruder Watch is known as in the USA, nowadays. Gib is en route to New Zealand for a radio conference, and I hope to have an "eyeball" QSO with him, whilst he is passing through Sydney.

I don't often get the chance to meet intruder watchers from overseas, or from inter-state, for that matter.

NEW MERIT CERTIFICATE

I would now like to take the opportunity to mention the striking of an Intruder Watch "Merit Certificate", which has been approved by the WIA

Bill Martin, VK2COP
FEDERAL INTRUDER
WATCH CO-ORDINATOR

33 Somerville Road, Hornsby Heights, NSW 2077

Federal Executive. This certificate will come into effect shortly.

It is not really an award, in the amateur radio sense, but is a certificate conceived to give some tangible recognition, albeit small, to those who have taken the time and trouble to support the Intruder Watch, and by so doing, have given assistance to their fellow hobbyists, by helping to keep tabs on the radio pests of the world, who baffle their way all around the frequency bands. The certificate will be issued on a "one per call" basis, and will not be easily gained. Provision is made for the ANNUAL issue of the certificate to that person, amateur or SWL, who has best supported the ideals of the Intruder Watch for the previous 12 months, IN EACH WIA DIVISION.

Each certificate will be consecutively numbered, and signed by the WIA Federal President, and counter-signed by the Federal Intruder Watch Co-ordinator, who holds office at the time. The certificate will not be issued as a matter of course, and ANY certificate for ANY Division will not necessarily be awarded in any particular year. The achievement will be recognised by the publication of the recipients details in this column, at the time of the award.

I think that those who take the time and trouble to monitor the amateur bands for the benefit of others should have, at least, this small token of appreciation.

STATISTICS

The IW statistics for July 1985 are: 327 Broadcast Intruders, 85 CW Intruders, 53 RTTY Intruders, 44 other modes of emissions and 56 Intruders obliged by giving identifying call signs.

How does it work?

SOLAR ELECTRICITY

A silicon solar cell works because of its non-silicon ingredients. First, a tiny amount of boron impurity is put into the melt during crystal growth. The boron atoms are dispersed throughout the crystal structure of the silicon. However, the boron-doped silicon has one less electron in the outer shell, so it has a "hole" that will accept stray electron. Thus boron-doped silicon is called "P-type".

After the crystal is sliced, a thin layer of phosphorus is diffused across the top surface of each wafer to form the "N" (negative) layer. The phosphorus atoms displace silicon atoms in the crystal structure, but each has one extra electron in the outer shell so it can become an electron donor when the right external stimulus is applied.

Light energy is such an external stimulus. When the light energy strikes the cell, positive and negative charge carriers are freed to migrate within the silicon wafer. There is a net migration of positive charge carriers to the "P" side and of negative charge carriers to the "N" side.

Attach leads to front and back of the cell and the charge carriers can flow through an external load to do useable work. The electrical current starts, stops and varies in intensity as a direct function of the light energy. When the sun shines the cell will work.

Each cell, regardless of size, has a potential of about half a volt. Connecting them in series will raise the voltage to more useful levels.

Most solar panels have cells connected in series and produce power at 16 VDC for use with 12 volt systems.

Cell area determine current output with 100mm cells having a current output between 2 and 2.5 A in bright sunlight (dependent on the manufacturer). By multiplying voltage by current one may determine the peak power capability of any given panel.

There is nothing complicated about Solar remote power systems. They are just sun-powered battery chargers. You can assemble them with common hand tools and maintain them with just a dust rag. You will never need to change the oil, spark plugs or filter, because there aren't any!

Solar cell modules make the system work, and storage batteries permit it to work at night since the modules only generate electricity during daylight hours. The batteries store the electricity for use at night or in periods of bad weather. A typical photovoltaic system includes sufficient storage for several days of normal operation.

The first step in choosing a photovoltaic system is to determine your power requirements. Make a list of items to be powered and compute the daily hours of operation for each. Multiply the power of each item by the hours of operation to get watt-hours per day of total consumption.

To figure how many solar panels you will need, however, you need to compute the ampere-hours per day of each piece of equipment. To get Ah/day divide watt-h/day by your system voltage.

For a simple DC system divide by 12 volts. For example, you might have four fluorescent lights, a 12 V communication station and a DC powered television set. The lights draw 1.7 A each, or 6.8 A total. The two-way radio station may draw

1 A on receive and 5 A on transmit the TV 2 A. Your typical usage might look like this:

Item	Current Drain A	x Time (h)	= daily usage (Ah)
Lights (4 x 1.7)	6.8	x 4	= 27.2
Radio Receive	1	x 4	= 4
Radio Transmit	5	x 0.5	= 2.5
TV	2	x 4	= 8
			41.7

Next compute the number of solar panels required to supply this power. A 40 watt panel can produce 2.5 A peak, lets say 2.3 A average per hour. The average useful number of hours in central South Africa is 6 thus $6 \times 2.3 = 13.8$ Ah. So 41.7 Ah + 13.8 Ah = 3.02 panels.

A four panel system would comfortably satisfy the above requirement.

With a photovoltaic system, you can only take out as much power as you put in. This may require establishing some new habits about electricity consumption. Plan to conserve electricity from the start. If your system allows three hours of television viewing per day, you cannot expect to watch for six hours, unless some other item, say one or two lights less are used.

You are the decision maker.

Bear in mind that in the above example the correct Ah rating is not 41.7 Ah but twice that or 83.4 Ah + $3 \times 41.7 = 208.5$ Ah thus giving you three days of usage during bad overcast weather.

Adapted from an article by Patch Scott Z56ADQ in Radio 25 — December 1984.



FORWARD BIAS

Ken Ray

PO Box 710, Woden, ACT 2606

VK1 DIVISION

NEXT MEETING

The last meeting for 1985 will be our end of year social event, on 25th November. Bring your spouse or friend, and share a drink, meet old and new friends, and have a good time. The meeting is in the Griffin Centre, Civic, and doors open around 7.30-7.45pm. The bookstall and QSL bureau are available at the meeting.

VK1 AWARD

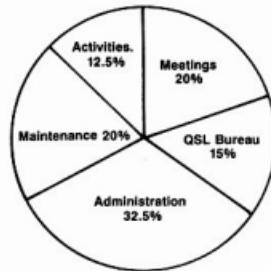
An update on the VK1 Award from the Awards Manager, Phil VK1PJ, lists those who have recently gained the Award.

ZK1V99, First ZL SWL, VK2DJJ, VK2NAN, VK2NEC, VK1ZXA, VK4MAX, VK3DVE, VK1NYA, and VK2VFL.

For those looking for VK1 stations, the VK1 Award Net is run each Sunday evening on 3.570MHz + CRM, after the VK1 Divisional Broadcast, around 1030UTC (8.30pm EAST). Phil would particularly welcome those VK1 stations that rarely (or never) join the net to come up.

1986 MEMBERSHIP FEES

At the September Committee Meeting, the committee recommended that the VK1 component of members fees remain at \$9.50, so if the Federal component remains unchanged at \$2.50, VK1 members will pay \$34 in 1986. This makes VK1 one of the lowest priced Divisions to belong to.



1986 Planned Expenditure — VK1 Division

For 1986, we are budgeting on an income of around \$2 000. Of this, one third will go on administration and secretarial costs. Other major items are, meeting room hire and equipment maintenance and depreciation. The pie chart shows the approximate breakup of expenditure.

AR

VK2 MINI BULLETIN

Tim Mills VK2ZTM

VK2 MINI BULLETIN EDITOR
PO Box 1066, Parramatta, NSW 2150



HOMEBREW CONTEST

Are you building or about to start a project? Why not enter it in this years event. The closing date is 1st March 1986. Entry forms are available from the Divisional Office, at 109 Wigram Street, between 11am and 2pm, Monday to Friday, or 7pm on Wednesday night. Or you may phone (02) 689 2417 or write to PO Box 1066, Parramatta, NSW, 2150. Check with your local club as some may also have details and/or forms for entries.

NOVEMBER EVENTS

On Sunday, 3rd November, the Conference of Clubs will be hosted by the Westlakes ARC at Terlaba.

On the weekend of the 9-10th September, there will be a WICEN exercise at Schofields Air Show.

The Batemans Bay Car Rally, postponed in September due to rain, may be held towards the end of the month.

VK2BQK

The Museum has been closed for the remainder of this year while a new exhibit, for the display area, is set up.

DECEMBER BARBECUE

The Dural Committee and Divisional Council invite you to attend VK2WI on the first Sunday, 1st December. Further details will be announced on the Divisional Broadcasts during this month.

HISTORICAL ARTICLES

The next VK2 Special Edition of AR is scheduled for March 1986. Material is required for this feature. If you have anything, please contact or send to the Divisional Office.

AR

VK3 WIA NOTES

NEW MEMBERS

The Victorian Division of the WIA extends a warm welcome to the following members who joined in the month of August.

Simon Anderson VK3KRL, George Antippas, Kim Briggs VK92B, Arthur Brighton VK3ACB, John Carwardine VK3BMC, A Fisher VK3KTF, Douglas Flynn, Annette Inness, John King VK3XLN, Ronald La Franchi (SWL), Nick Lycopoulos.

William Pearce (SWL), Glenn Potter, Michael Scott VK3XMS, Luke Thistleton-Wade VK3PHU, Robert Toseland VK3XRT, Max Tulloch VK3AKT, Laurens Van De Paveert VK3CLV, Roderick Wall VK3BKQ, Peter Westley VK3DXD, Alan Woolley VK3AMT, Frederick Wright, John Day VK3ZKF and Barry Petersen VK3XIA.

BEECHAM AND LINTON

Several months ago, the Lord Mayor of Melbourne, Councillor Eddie Beecham, was pleased to receive greeting letters from the City of Melbourne, Florida, USA. The occasion was to mark Melbourne's 150th Anniversary and had been arranged through the international spirit of amateur radio.

Greetings were received from Harry C Goode, Melbourne Mayor, and the Platinum Coast Amateur Radio Society, based in Melbourne. PCARS mentioned, in its letter, how an early settler in its city was a former Melbourne, Australia, resident Corinthia John Hector. His colorful stories of Melbourne prompted fellow settlers to name their area Melbourne, also.

Vic WIA President, Jim Linton VK3PC, presented Councillor Beecham with the letters at the Melbourne Town Hall. Not missing an opportunity to push the cause of amateur radio, Jim asked the Lord Mayor if he knew much about the hobby. To his surprise, Jim was told about the

role Councillor Beecham played in a part of Australia's amateur radio history.

As a school teacher in the small Victorian town of Birchip, he was asked by Ray Naughton VK3ATN, in 1966, to check the mathematical calculations Ray had done for his first Moon Bounce contact with the United States.

AR



PRINTERS GREMLINS HAVE A SHUFFLE WITH AUSSAT

Two typesetting errors — DCwin (Darwin) and h-ligh (high), beyond the control of the Producers and Printers were compounded by the lines "of Ltd, of the attenuation caused by rain in the various times of the year" appearing at the head of column 3, page 14, October AR — instead of commencing underneath the captions for the pictures.

The Management of Waverley Offset Publishing Group apologise for any inconvenience or embarrassment this has caused to AUSSAT Pty Ltd, the writer and the readers of the magazine.

Please amend your copy now.

SHOW THE BADGE



It symbolises 75 years of service to radio amateurs and shortwave listeners.

All WIA members and associates are entitled to use the badge.

Many have it printed on their QSL cards and stationery.

Then there is WIA T-shirts, Neck Ties, Pullovers and other regalia — Available through your Division.

Use the badge with pride ... SHOW that YOU ARE a member of the WIA!

FIVE-EIGHTH WAVE



Several months ago, I asked which old timer had been licenced the longest? Well, I still don't know the answer, but Keith Ring VK5KH, rang me from Kapunda, with a list of OTs that he thought were eminently more deserving of mention, than he. Those mentioned include, Reg Anthony VK5CM, Cliff Moule VK5CX, Elmore "Shep" Shepherd VK5DC, George Andersen VK5GA, Vic Chennell VK5JH, Darcey Hancock VK5RJ, George Luxon VK5RX, and Arch Hewitt VK5XK. All the above were licenced in, or before, mid-1930.

I shall look forward to meeting the above gentlemen, and many others, at the 1985 Old Timers Luncheon, to be held at the Woodville Football Club, on Thursday 14th November. Not that I qualify as an old timer, but for the past couple of years a group of wives of the OTs and other interested ladies have met for lunch at the same time and venue, and I hope to join them again this year.

If you are interested, listen to the Broadcast for more details.

TAKE YOUR OWN LUNCH

That will be a busy week, because three days



From Bill Blitheringwits garage emerged the muffled sound of somebody uttering curses, interspersed with slight yells of pain. Bill had been searching for about an hour, but so far his efforts had been entirely in vain. He was looking for a card table. He knew that there was one around somewhere, since he could distinctly remember buying the wretched thing. It seemed only yesterday but in fact it was some time in 1938 that he had found the little folding table in a junk shop. He could also remember putting the thing away at some time, but the problem was where.

He also couldn't remember the reason why he had folded the thing up and stowed it in the rafters. The rafters! That's where he found it, covered with dust but still apparently intact. He stood on his Holden's roof and tugged away. A piece of steel piping fell onto the car bonnet with a clang and tumbled to the ground. It left behind a long dent and a trail of scratched paint where it had slithered downwards.

This did not deter Bill. Once he had made up his mind to do something, nothing was allowed to get in his way. Finally he got the table down and carried it into the shack. The reason behind all his efforts stood before him on the carpet — his recently acquired Model 100.

Ever since he bought the heavy machine he had been trying to work out where he was going to install it. Then, in the middle of the night, a flash of inspiration lit up his brain. Of course! The card table! He was for going out to the garage right away and fetching it but his wife had (justifiably) stamped on the idea. It was 2:30 in the morning.

Bill unfolded the spindly legs of the little table, now warped with age, and stood it upright. It didn't look right somehow. It had a decided wobble. Then he remembered why he had originally put the thing away. His wife had complained that it made things fall over. Bill had to agree with her about that. He had lost quite a lot of beer because of the table's nasty habits. Anyway, the weight of the Model 100 should make it sit properly. It was a heavy machine and if that wouldn't steady the table down, nothing would.

He set the table where he wanted it and then bent down to pick up the RTTY machine. He struggled it

later, the WIA Picnic will be held at the Bridgewater Oval. The proceedings start about 11.00am and after a settling-in period, races of all sorts, foxhunts (usually of the sneaky sort), and similar entertainment will be the order of the day.

This year may see many new innovations, as Gary VK5OR and his XYL, Valmai, will be taking over much of the organising. The picnic is open to all WIA members and their families. You take your own lunch, but soft drinks, ice creams, and lollies for the children, are provided by the WIA. (Soft drinks and ice creams are for everyone). It is a very pleasant venue, and I hope to see you all there.

SOME PEOPLE HAVE ALL THE FUN

Some people get all the tough jobs! Recently, Graham VK5AQZ, in his role as Jubilee 150 Co-ordinator, organised an Amateur Radio STATION Carriage, which was attached to a train, that just happened to be going to Perth. With Alan VK5ZN and Peter Koen (who spent the previous three days silkscreening posters!), Graham spent the best part of four days on the train, and two in

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

Perth, telling people about J150, and for those on the train, about amateur radio.

Apparently, a good time was had by all, except Bob VK5BJA, who having put up aerials, etc, had to stay behind because of work commitments.

I was invited, but before I could accept, it was pointed out to me that my presence would complicate the sleeping arrangements.

DIARY DATES

14th November — Old Timers Luncheon, Woodville Football Club and YL Luncheon.

17th November — WIA Picnic, Bridgewater Oval.

23/24th November — Display at the SA Hobby Fair.

26th November — General Meeting and Trevor Conlon, guesting from CFS Headquarters.

10th December — WIA Christmas Social. Speaker Geoff Taylor VK5TY, on the first Burra to Broken Hill Wheelbarrow Race. (At the time of writing, the venue is uncertain, so check the Broadcasts for details.)

Bill Prepares for RTTY!

over to the table and placed it firmly on the top. The long-suffering table gave a quiet groan. Then the thin legs gradually splayed outwards. Bill watched as something very surprising happened: All four legs suddenly collapsed with dramatic effect and the table top bowed downwards at the same time. The end result was that the Model 100 landed with a thump on the floor. Fortunately, the impact was deadened slightly by the presence of Bill's feet.

GOLD COAST AMATEUR RADIO SOCIETY

The Eighth Annual Gold Coast HAMFEST will be held on Saturday, 9th November 1985, from 10am to 5pm at the Albert Waterways Community Centre; opposite Pacific Fair, Broadbeach.

Displays and demonstrations will include: all facets of amateur radio equipment, computers, lasers, videos, a WIA bookshop, jewellery and copper art. There will also be a ladies fitness class demonstration.

There will also be a variety of contests for the young and old, alike.

Further information may be obtained from Bill Stevens VK4YN, President of the GCARS, Box 588, Southport, Qld. 4215, telephone (075) 35 7415.

ALL WELCOME!

AR

DEVIL NEWS — NW Branch News

It was pleasing to have a gathering of 25 at the last Club meeting. Two guests, Daniel VK4YDC and Roy Rothwell, were welcomed as was Darren Dell VK7ZDD from Hobart, an ex Devonport High School student, since moved south. It was pleasing to see Tony VK7AH back in the Secretary's chair, and also for the Club to gain two new members.

Devonport High has a class in electronics and quite a number of the boys from the school now have call signs, a pleasing result to the school curriculum. The school call sign, VK7DHS, is operational most lunch hours and after school, so if they are heard, please give them a call.

The Club has had a pleasing month in the QSL department with 154 cards incoming and 84 outwards. Several W stations have been heard, so maybe the bands are picking up. Let's hope so!

Permission has been received for the Club to begin work on a 70cm repeater, so now it will be all stops out to get it operational!

Ted Holmes VK3DEH

20 Edmunds Street, Parkdale, Vic. 3195

Bill sat on the floor, nursing his feet, and looked at the debris. It was as though a house had collapsed on a matchbox. Splintered pieces of wood lay all around and the Model 100 was sitting triumphantly on top.

It looked as if Bill would have to think of something else to support the drafted machine. Meantime, the bits of wood might come in handy for starting the barbecue.

AR

The regular RTTY Broadcasts have had a few problems with 'Murphy' but not even he will keep the 'stout-hearted' down, so perseverance is the order of the day.

John Duncombe, the Club WICEN Co-ordinator has been studying the requirements needed for an exercise and checking areas of Map Reading so that the Club may be prepared for an exercise, when and if called upon.

Ron VK7RN related his experiences of the difficulties in erecting a tower in the township. It is not easy to get the requirements for amateur towers, anymore.

Bob VK7KAB has been placed in charge of fund raising activities, and it is hoped to have some good ideas operational by the next meeting.

The meeting concluded with a talk about the Club Repeater and workings of same, from Andrew VK7ZAP.

Contributed from Max Hardstaff VK7KY.

AR

CLUB CORNER





OVER TO YOU!

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

RADIO IS FUN

From time to time we find, in Amateur Radio and other magazines, which cater for the amateur radio enthusiast, articles or letters bemoaning the fact that the hobby is not what it should be. The complaints centre around many aspects of our activities but always seem to present the problems without even a hint of the answers.

We are told that there are no young amateurs coming on to fill the gaps left by the silent keys, that appliance operating is the order of the day and that the days of experimentation are over. The standard of examinations are criticised for everything from being too difficult to being childishly simple, and the use of CW is considered everything from a discipline to an absolute waste of time and effort.

With a little thought, we can see that, in fact, all things are true to all men, the youngsters are not entering the hobby at the maximum possible rate, there are appliance operators, many of whom also happen to be highly skilled in their chosen task, the examinations are simple to the technically minded but very difficult to a hobbyist who has not entered the field before and CW can be a waste of time to one who is not interested in the mode, but it is a fine discipline and, as such, has great value. One of the biggest problems is that the radio field has progressed so rapidly, that it requires a technocrat to even start to understand some facets, but this is no reason to deny the hobbyist entry to the fold, therefore examinations must always be aimed at preliminary standards, otherwise the newcomer makes it no further than the first page.

I think the world of the amateur has forgotten the most important value that the hobby has, and really it is the *raison d'être* of the entire scene. The simple word is *fun* — we can use many, many expressions to convey why we started and continued in the hobby, but they can be reduced to the one concept of *fun*. Of course, to sell this idea, something else is needed and to further this, I now turn to the "Editorial" which started me typing this letter. Alan K2EEK, has captured much in his leader, which he assures me is the start of a series to try to convince the amateur world that they have a problem which they themselves must solve. Alan is the Editor of "CQ Magazine" and has a large reading public. I only hope that those VKs who are unable to otherwise see his writings are given the opportunity to read of the Unicorn.

73,

Jim Swan VK2BQS,
PO Box 93,
Toongabbie, NSW. 2146.

The following is the editorial referred to in Jim's letter.

AMATEUR RADIO NEEDS A UNICORN

I am still at the awkward age — not old enough to be sage and wizened and not young enough to have all the answers. When I first got involved in amateur radio, people my present age were in charge of radio clubs and they did have all the answers, at least as far as kids my age were concerned. People my present age were the role models, the teachers, and the ones who gave us the terrible jobs on Field Day. They were the ones who quieted us down at meetings and told us they were sorry but we couldn't attend a club social because beer was going to be served and we were minors. They collected our dues, though, and gave us our first history lesson — an understanding of "taxation without representation".

In spite of the above, we persisted in amateur radio, because at the time there were no real alternatives. There really was no TV, a Sperry UNIVAC was unaffordable and would take up the whole block, sex was not to be invented for a few years, drugs came from a pharmacy when you were sick, and drinking was something "old folks" did to keep you from their parties.

But we knew how to make things better with the world, and we especially knew what the club and amateur radio really needed. We also knew that if we waited, someday we too would be that old and we would be running things our way. Well, those old folks just got older and more set in their ways. We got involved in other things and drifted away to school and to starting jobs and families, putting amateur radio on the back burner for a while. Oh, it was still there, but other things were a bit more important at the time. It just wasn't time for our time.

About the time when it became our time and we could give out the terrible jobs at Field Day to the kids (kids and lids) and enjoy the parties without the kids (although they helped pay for the parties) and have meetings at which we could tell them to shut up, it became apparent that there were no kids. They were into CB. The ungrateful wrecks wouldn't co-operate with the Master Plan.

The kids of the mid 1960s and early 70s couldn't see the value in taking abuse and in being one license grade behind, these being the rites of passage. It wasn't worthwhile to wait and endure so that you could do it to someone else later on. They were crass enough to want something immediately. CB was "dumb" enough to offer instant acceptance to everyone on an equal level. Everyone could indulge in the same fantasy right at the same time. Everyone could talk "southern", pretend to be a truck driver, wear funny T-shirts, and display CB decals and belt buckles. CBers could form national groups, have large social gatherings for the whole family, and in general laugh a lot and have a good time. For shame, they didn't know.

We did offer to show them the error of their ways. We used all the old (there's that word again) winning ways: derision, contempt, and hostility. We honestly told them that they were not really enjoying themselves and that, and only we, had the answer. Some did get it, "convince us", and some kept both ears in the fire, but the majority of the 25 million went on somewhere else. They're all out there somewhere doing whatever now, but it's my guess that they're still looking for fun.

The computer craze caught the next generation or two of kids for many of the same reasons. Amateurs are also involved with computers, doing wonderful and interesting things, but even if every licensed amateur (and bootlegger) was involved with computers, the numbers wouldn't come anywhere near the number of civilians who are. By now, however, the panic is starting to set in as the realisation hits home. Where are the kids? Well, whatever the next electronic wizardry is that comes down the pike, they will be there.

The one big, glaring fault with our amateur radio tradition is *NOT* the amateur radio part. We all agree that whatever it is, it is great. Why it doesn't attract kids may have more to do with the tradition than the amateur radio part. To a lot of us it still is exciting, pleasurable, and immensely worthwhile. The problem is, how do you convey that? How do you share a world with someone perhaps less than half your age and treat that person as an equal and not a child being scolded? How do you explain the fun in working a "rare" one, in building a project, or in restoring a classic? How do you describe a hamfest to talk about friendships that transcend international and political boundaries? Amateur radio is an immense universe that is constantly changing. Those who limit the change in the name of "tradition", especially their tradition, have restricted the growth of amateur radio and have begun to choke its very life.

If we presume for a moment that we do have something of value to offer a youngster, namely amateur radio, then we have to examine it on its own and not as a character-building rite of passage. Since everyone involved in amateur radio feels very strongly about and extremely

protective of his own definition of it, then there has to be a very worthwhile core to it that is universal. It is this essence that is the product, the commodity that must be sold. This essence, and I know that it's hard for some to believe, is FUN — FUN on its own terms and not part of any process.

Some of us have to loosen up and stop taking ourselves so very seriously. It's hard to sell a pastime that is so serious with portents of a lifelong career in engineering, physics, and industrial management to a 12 year old. There is nothing wrong with those ambitions, but they have nothing to do with amateur radio here and now. Many careers, including mine, have come from amateur radio, but that was not the reason or motivation for getting involved in the hobby initially. I thought that I would enjoy it and have a good time, period. It looked like fun.

Amateur radio has a lot to offer a youngster. We should know best, as it was offered to us. Today there is tremendous competition for a youngster's time and abilities. We need and can use that talent. If we "older" folks who will benefit in the long run, it's up to us to come up with a way ofveying for that time. The traditional cod liver oil approach of "take it" (*if took it*) even though it tastes bad and "some day" (*maybe*) you'll understand when you're big and strong just hasn't worked.

So it's up to us to find the way to sell the product. Us is everyone, every organisation, and every group who has a stake in amateur radio. We as individuals or in groups have to compete for attention and interest. It's not easy. We have to think beyond ourselves. The product is proven and good. We have to bring it to market and sell it using modern techniques, just like an IBM. We have to develop catchy ways of drawing attention to amateur radio and creating an interest in what we do.

Recently the circus came to New York. For several days murder and mayhem, world crisis, and political unrest left the front pages in favour of the speculation on whether or not a certain animal featured in the circus was indeed a unicorn.

Prior to this the argument was academic, as the only unicorns available were those depicted in artwork and famous tapestries. However, from the numerous depictions of unicorns one would have to say that the general consensus of those who had seen these renderings would lead us to believe that a unicorn was more or less shaped like a horse. The circus unicorn was shaped like a goat, looked like a goat and made goat sounds, and in the dark with a hat on could be honestly mistaken for a goat. That it was a goat was finally and officially determined by the US government after much deliberation and careful inspection.

The circus I'm sure revelled in the publicity, and I don't think that too many people were disappointed in discovering that the one-horned goat was not really a fabled unicorn. A lot of folks, though, heard about the circus being in town and went to see for themselves to "decide" on the authenticity first hand. After all, a real unicorn is a serious thing, and we shouldn't be swayed by all of the extra tickets the circus sold.

Well, the unicorn idea was just used, and it's too soon to try to pass off a squirrel as a miniature dinosaur. The rock video option is still open, and it's still possible to get amateur radio on the charts via a hit single. Publicity is where you can find it these days. Most of our publicity has come about via extremes, natural disasters, accidents, wars, and space flights. They are hard to generate on demand, hard to control, and usually involve some measure of tragedy. It's not really an "up" sales tool.

We've got to come up with something that we can use during peacetime, sunshine, and happiness and that's exciting, novel, and captures the imagination. I know we can do it. We've waited for our time, and our time is now.

Editorial from CQ June 1985, written by, and printed with the kind permission of Alan Dorffhorst K2EKK, Editor, *CO The Radio Amateur's Journal*.

AR

EVERYTHING IN READINESS

LEPARC have received a call sign for the International Youth DXpedition to Boston Island from 8th to 14th December 1985.

As mentioned in an earlier magazine, the students are busy constructing a rig, which will be used for some contacts on 80 and 40 metres, and there will be a variety of other equipment, to ensure adequate band coverage.

The allocated call sign is VK5IYY, but the Club has decided to use the option given by DOC, the VI prefix.

Whilst operational on Boston Island, the Club will be using portable power. The Commonwealth Bank are sponsoring QSL cards and there is a local competition to design the card. Things are looking good!

73,
Carol McKenzie VK5PWA,
President, LEPARC,
97 Dublin Street,
Port Lincoln, SA. 5606.

AR

WINNER SAYS THANKS!

As winner of the WIA Anniversary CW Contest, I wish to thank you for the trophies that have been presented to me, on behalf of the Institute and William Willis & Co Pty Ltd.

The contest was an appropriate event for the 75th Anniversary, and I deem myself fortunate in submitting the top score.

Yours faithfully,
Peter Alexander VK2PA,
Rollands Plains,
via Telegraph Point, NSW. 2441.
AR

WE'RE ON A WINNER? ??

Congratulations on allowing me to read the latest edition of Amateur Radio as soon as I received it. Previously our delightful representative at the Postal Service would carefully fold the issue and meticulously insert it through the letterbox aperture in such a way that the rain would completely permeate it.

Now I find that all the unwanted bills are saturated with the local rain and my edition of AR now completely dry and able to be read, immediately.

Admittedly, I do miss the opportunity to sit and carefully hold the AR carefully in front of the heater to dry it without the pages sticking together. I also find I now have a complete magazine whereas, before, many pieces tore off with my handling of the paper.

Keep up the good work.

Peter Ford VK3YTB,
7 Sherman Street,
Forest Hill, Vic. 3131.
AR

A BIG OPPORTUNITY FOR YOUNG PEOPLE!

Do you know a young person between the ages of 12 and 17, who wants to get into amateur radio? A number of amateurs from Sydney are planning a 10 or 12 day live-in Novice Amateur Radio Course during the 1986 May school holidays.

The camp will involve five or six amateurs as lecturers and supervisors. There will be places for about 24 students. The camp will be held near Sydney and will include both theory and practical electronics, regulations and Morse code. Other activities may include swimming, bushwalking and sports.

They also anticipate that a full amateur station will be set up, including AMTOR, Packet Radio and Satellites. This will give the students some on air experience.

Interested students and amateurs should contact the undersigned, enclosing a SAE.

Yours faithfully,
Peter O'Connell VK2JJJ
3A Algernon Street,
Castlereagh, NSW. 2223.
AR

WIA 75TH AWARDS

I am in receipt of the September Amateur Radio, and on page 6 there is a list of the WIA 75th Award recipients.

Against No 147 on the list, appears my name, B L Mills, but no call sign is indicated. This is the only entry shown thus.

Why was this printed this way? It is obvious that there must be a call sign involved, and that this is known to the awards manager. I have had this call for 39 years, and been a member of the WIA for 34 years, so why was the call sign not printed? If you are to use a person's name, then why not do it correctly, and not incorrectly.

I have no objection to my name being published, with call sign, but I certainly do object to it in the form in which it was used, which means nothing to anybody.

Yours faithfully,

B L Mills VK2AJE,
Box 109,
Cronulla, NSW. 2230.

Unfortunately, your call sign was inadvertently omitted from the list when it was typed for Amateur Radio and the Producers of the magazine thought it was meant to have just the name published. I am deeply sorry for the upset it has caused you, OM. — Jim Linton VK3PC, WIA 75th Awards Manager.

AR

REPLY TO AN EDITORIAL

The answers to the questions, asked in the September AR Editorial, probably need airing in Amateur Radio before our PRO uses them in a publicity campaign, or whatever he plans. I am sure Jim could proceed with more confidence, knowing that the issues have been debated among our widely scattered members.

I believe that the second question is the most important; the answer to that one will provide the clues to answers for the others.

Is the hobby (?) being promoted adequately? My answer is — yes, but in the wrong way. The cover picture of the September AR is a good example. Is that an amateur radio station? My estimate of the cost is \$15,000 and that doesn't include the aerial farm. Inside the September issue, for those people contemplating making a start, the advertisers provide the following information.

Morse Key — \$50
World Clock — \$75
HF Transceiver — \$1099
Power Supply — \$280
Antenna Tuner — \$400
SWR/PWR Meter — \$95
Broadband Dipole (?) — \$150
Total — \$2149

Most parents would not spend that amount to get young Jenny or Johnny started in the hobby of their choice.

Of course, we say it is not necessary to spend even half that amount to get started. Why not "promote" that fact? The WIA Book, Volume 1, is a good example of what can be done by the members; I suggest something similar devoted entirely to showing young people how to become involved in a branch of modern science and technology at very little cost and of great benefit to themselves. Such a book could be distributed free to all public and school libraries. It would have more chance of acceptance if prepared by members younger than 25 years. Count me out, I had my 65th birthday in September!

Lindsay Lawless VK3ANJ,
Box 112,
Lakes Entrance, Vic. 3909.
AR

I WUZ GUNNA

Over the last few years, I read in Amateur Radio, a number of stories about amateurs of quite a number of years standing, and was always interested in their stories of the early days. I knew such an old timer, I told myself, I must get around to taping his story one of these days and write it up for AR.

I had heard him talk of a lot of interesting things, anecdotes, old equipment, broadcasting music in New Guinea before the war, but I did not take

notes at the time, thinking that I could come back later and tape it all.

His obituary appears in this issue and if it appears a little thin on detail radiowise, that is because I did not get around to getting his story before he passed on. So another gold mine of amateur radio history is lost to us.

So as the title suggests, "I wuz gunna", but didn't. The moral of this story is 'don't let this happen to you'. If you know an old timer, get your tape recorder out NOW and get the raw information on tape, before it is too late.

Brian Dennis VK4XS,

11 Jethro Street,
Aspley, Qld. 4034.
AR

FURTHER TO SATELLITE ATS 1

I refer to the correspondence in Amateur Radio, August 1985, on the location of satellite ATS 1 (66/110A).

It is surprising that both Ash VK3CIT and the Technical Editor assume that a Geostationary Satellite will remain in one location over a period of five years.

Although ATS 1 was at circa 150 degrees west longitude in the 1970s, it was reported at 176.5 degrees west in June 1982. Shortly after this date, the satellite was moved to circa 164 degrees east, and remained in that position until late 1984, when it began moving eastwards, reaching 179.08 degrees east on the 12th February 1985.

It has since travelled westwards to its latest reported position of 155.14 degrees east, on 15th June 1985. This and other data on ATS 1, has been regularly included in the AMSAT Australia column in Amateur Radio.

SIRIO (presumably 77/080A), also referred to, has remained reasonably stable during the past five years, at 64.5 degrees east, +/- two degrees.

My data source is the NASA Spacewar Bulletin.

Bob Arnold VK3ZBB,
41 Grammar Street,
Strathmore, Vic. 3041.
AR

TEST EQUIPMENT

AUSTRALIA'S LARGEST RANGE OF SECOND HAND:

Hewlett Packard
Tektronix
Marconi
Solartron
Boontoon
BWD
Bruel & Kjaer

Oscilloscopes, sig gens, spectrum analysers, multi meters. Wide range of amateur and communications equipment — valves, coaxial connectors and test accessories. Repairs and service to all makes and models.

ELECTRONIC BROKERS AUSTRALASIA
20 Cahill St, Dandenong
793 3998

ARX

Silent Keys

It is with deep regret we record the passing of —

MR S S F CLAPHAM VK6NFY
MR W H (BILL) HOLLAND VK4WT
30/07/1985

MR J C KAY VK4VM

MR GILBERT POLLOCK VK2FU
31/07/1985

MR A E (Robbie) ROBERTSON VK2US
10/09/1985

MR HARRY SELMAN VK3CM
18/09/1985

MR RALPH WILLIAMSON VK3BRF
03/08/1985

Obituaries

RALPH L WILLIAMSON VK3BRF

It is with deepest regret that we report the passing of Ralph Williamson, on 3rd August 1985, while on holidays, with his wife in Queensland.

Even though confined to a wheelchair, Ralph was an ardent CW enthusiast who's 'bug-sent' Morse was always a pleasure to receive.

With the aid of his trusty 'Simplex Auto' he became famous for the expression, "G'day" when initiating a contact, and "Happy daze" when signing. His jokes, stories and humour on the key were unparalleled. Ralph's humour made CW a real joy for all who listened.

Ralph was a regular on the Friday night North West CW Net, (on 3,510MHz at 1130UTC) and it was here that we learned of his many exploits; everything from camping with his 'bride', operating whilst mobile (both car and wheelchair), to rolling his chair into a bramble bush. It was with wit that Ralph had the fortitude to look on the bright side of things. Hence he usually brightened the day of everyone he came in contact with.

While on radio, his outlook always reflected sincerity and mateship. All of Ralph's fellow amateurs were deeply saddened by his passing. Thankfully memories linger.

Deepest sympathy is extended to his wife Joleen and family. In Ralph's own words; "I can't stay long tonight chaps, as the batteries in my chair are flat. So I'd better hit the perch early so my bride can put them on the charger. Happy daze." 73

Ralph will be greatly missed.

Maurice Milani VK3CWB
Les Warren VK3BPW
Bob Fryer VK3AQF
David Harris VK3DW
Barry Samuel VK5BLX AR

HARRY SELMAN VK3CM

May my YF and I pay our respects to a very lovely OOTer who never failed to visit us each time he came to Sunny Queensland — yearly, if he could manage it. Like so many pioneer Australians of that era, he kept us amused with an endless variety of humorous stories — his recall of past events was excellent. Since he obtained his licence in 1925, his interest in amateur radio never waned.

Harry's death, on 18th September 1985, came as a shock, as he had paid us a visit only recently and appeared chipper and

quite active. He had driven on his own from VK3 and was about to return to Geelong.

Liking Harry VK3CM, was very easy. His natural goodwill and gentlemanly manner are qualities amateur radio can ill afford to lose. The fraternity is very much the poorer for his passing.

Deepest sympathy is extended to his two sons and families in Melbourne and Brisbane.

Alan Shawmith VK4SS

GILBERT POLLOCK VK2FU

Gilbert was born in Cumberland, UK, in 1911, but was taken over the border when he was two years of age, and really remained a Scot for the rest of his life. He migrated to Sydney in 1922 to live in Belmore. After school days at Canterbury Boys High School, he joined his family's firm, Pollock Electrical Co. Later in 1930 he became Chief Engineer at Radio 2KA, Katomba.

He was an active member of the Lakemba Radio Club and became VK2XU in 1931. Over the next few years Gilbert made hundreds of contacts.

In 1937, Gilbert returned to London, obtained the call sign G2OY, and had relinquished VK2XU and his mobile call, VK2YQ.

During the war years he was an engineer at the Scottish Regional Transmitter at Westerglen and later ran as electrical and radio retail and repair service in Falkirk.

In 1951, he returned to Sydney and took out VK2FU, a call sign he retained to his death.

A move to Blaxland, in the Blue Mountains, during 1962, saw Gilbert and his sons, Jim VK2WX and Adrian VK2FZ, erecting a 100 foot (30m) mast to accommodate beams for 20, 15 and 10 metres. These came into operation in 1965, with phenomenal signals to Europe and the world.

In 1973, he moved to Wentworth Falls but as this was a high wind area, Gilbert used wire antennas for HF operation and verticals for VHF. He was active on all bands, 80 to two metres and was always particularly happy to speak with G and GM, where he had many amateur friends.

Gilbert was on a sentimental visit to G'lend when he became ill. He passed away in Edinburgh on 31st July 1985 and was interred in a church yard in the quiet Scottish town of Selkirk.

Deepest sympathy to his widow Nancy, daughter Helen and sons Adrian and Jim.

John Warren VK2OX AR

BILL HOLLAND VK4WT

Vale Bill Holland VK4WT, who passed away at his home at Strathpine, near Brisbane, on 30th July 1985.

Bill obtained his AOCP in Melbourne during the late 1920s, his certificate being number 114. Unfortunately, his originally allocated call sign is unknown. He had been playing with radio for sometime before obtaining his licence, and according to his wife, Jess, he never stopped.

After attending a state school in Melbourne, followed by 18 months doing a fitting and turning course, Bill took on a variety of jobs, including gold prospecting, rabbit shooting and ironing. He also tried to establish a small radio repair business, but, with the run up to the Depression, there was not much money around for such luxuries as radios, and this venture did not prosper.

At this time, gold was big news in New Guinea, and as jobs were very difficult to get in Melbourne, Bill set off for Wau, the gold centre at that time. Working in the Wau/Bulolo area, Bill had a variety of positions, including barman, mechanic, miner and eventually an electrician with Bulolo Gold Dredging. It was during this time that

Bill first obtained the call sign VK9BW, and was active for most of his stay in Wau. During this time, he also met his future wife, Jess, who was staying with her brother, the local publican.

Following the Japanese landing during WWII, Bill and Jess were evacuated to Australia, where Bill was placed into radio in Melbourne under the manpower regulations. He was eventually able to join the Army in 1944 and was posted to Port Moresby, where he was involved with maintenance of the Unit's radio equipment.

After the war, Bill tried to settle down at Mackay, in Queensland, with the call sign VK4BQ, but New Guinea called and he returned, this time being located at Rabaul, again with the call sign VK9BW. Continuing in radio, he worked as a serviceman, eventually having his own business. However, the advent of transistored equipment, children at boarding school, and his health all forced him to leave and settle in Strathpine. As his previous VK4 call had been reallocated, he was issued with VK4WT. Always a HF operator, he remained active, both operating and constructing, until his passing at the age of 74.

Bill will be missed by many of his friends, and particularly those he met on the amateur bands over more than 50 years.

He is survived by his widow Jess and four children.

Brian Dennis VK4XK, AR

MANAGEMENT GUIDELINES

Exceptionally well qualified — hasn't made any blunders yet.

Careful thinker — won't make a decision.

Plans for advancement — attends the bosses club.

Career minded — a back stabber.

Conscientious — scared.

From Westlakes ARC — Monthly Newsletter, August 1985



Welcome here

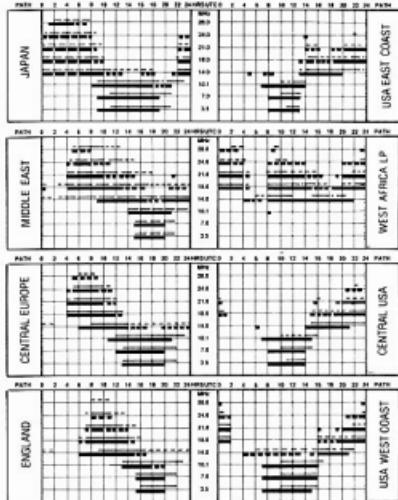
boardroom

welcome here

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE

14 Esther Court, Fawkner, Vic. 3060

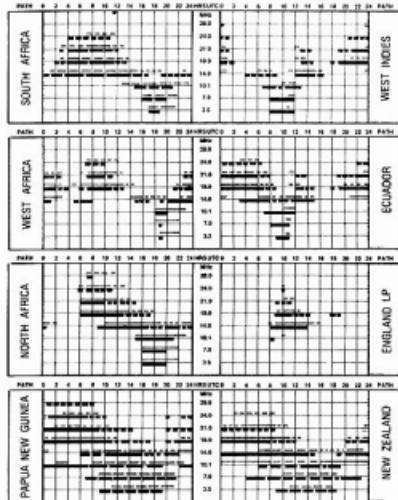


LEGEND

From Western Australia (Permit) From East Australia (General)



Better than 50% of the month but not every day
Continuous fresh



Paths, unless otherwise indicated. Inc.

LP = long path; all paths are short paths

Predictions reproduced courtesy of the

Department of Science and Technology,

Ionospheric Prediction Service, Sydney.

All times in UTC.



Less than 50% of the month broken
Inert
Mixed
Made
Dependent on angle of
refraction
Long broken line



November issue:

ETI LOOKS AT SATELLITES

The November issue of *Electronics Today* looks at what is available on satellites and how to tune into them. Sixteen Pacific Ocean satellites are listed along with an explanation of satellite terms and antenna calculations.

ALSO IN NOVEMBER

- ★ RTTY/FAX decoder to build for the cat
- ★ Toroidal cores in rf circuits
- ★ Build a programmable navigating robot
- ★ Starting Electronics looks at hardware



NOTICE



DEADLINE

All copy for inclusion in the January 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by midday, 11th November 1985.

HAMADS

PLEASE NOTE: If you are advertising items **FOR SALE** and **WANTED** please write each on separate sheets, including **ALL DETAILS**, eg. Name, Address, on both. Please write copy for your **Hamad** as clearly as possible, preferably typed.

- # Please insert STD code with phone numbers when you advertise.
- # Eight lines free to all WIA members. \$9 per 10 words minimum for non-members.
- # Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- # Repayments may be charged at full rates.
- # CTHR membership address is correct as set out in the WIA current Cal Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

Conditions for commercial advertising are as follows: The rate is \$22.50 for four lines, plus \$2 per line (or part thereof) minimum charge \$22.50 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver & transmitting Applications. For data & price list send 105x220mm SASE to: **RJ & US IMPORTS**, Box 157, Mundella, NSW, 2223. (No enquiries at office... 11 Macken Street, Oakley). Agencies at: Geoff Wood Electronics, Rozelle, NSW; Truscott Electronics, Croydon, Vic; Willis Trading Co, Perth, WA; Electronic Components, Fishwick, Plaza, ACT.

COMPUTER PRINT-OUT OF BEAM HEADINGS & DISPLACEMENTS: From exact CAD to all standard formats, printouts worldwide. Send your latitude, longitude & SU11 to: **G MILLER K7GEL** (ex VK6KGG), 3715 Brightwood Avenue, Las Vegas, Nevada, USA, 89120.

WANTED — ACT

BASE STATION: Suitable for Novice operator. Nothing elaborate or expensive, please. Ph: Canberra (062) 31 8024.

WANTED — VIC

AUDIO TRANSFORMERS: Plate (20 000ohm to 600ohm, Trimmer TA733B or equivalent. Bill VK3VGY. Ph: (03) 25 1456.

FRDX-400 RCVR: Working order, with manual. Laurie VK3AAJ. OTHR. Ph: (03) 390 1010.

HF LINEAR — FL2100Z: Or similar. Ant tuner FC-102 or similar, operational or not. Ray VK3SHA, CIO PO Sydneyham, Vic. 3033. Ph: (03) 390 1010.

HUSTLER VERTICAL ANTENNA: HF fixed station, 4-band, Model 4-BTV (ex 5-BTV). John VK3FPH. Ph: (03) 877 1135(AH) or (03) 658 4332(BH).

HY-GAIN HY-QUAD H02: Graeme VK3BHG. Ph: (03) 735 7300(BH) or (03) 870 4371(AH)

IAMBIC KEYER: With weight & symmetry controls. Also

Bench iambic Paddle. Gil VK3CGG. Ph: (057) 55 1124(AH) or (057) 55 1158(BH).

WANTED — QLD

AEA MORSEMANIC 1 OR 2: Also Paddle key. Price & details to Fred L40855, OTHR. Ph: (07) 396 3521.

VALVES: 3.6kQ8 or equivalent, to suit Trio 9F-50DE Comms rx. All L40126, OTHR. Ph: (07) 94 1271.

FOR SALE — NSW

COLLECTORS ITEM: US Army radio tx, BC—458-A. Western Electric. Serial No. 01/14322. WWII. Small mod. Freq range 6.3-1MHz. Free. VK2DJM, OTHR. Ph: (07) 36 5868.

COMMODORE 64: High Technology RTTY/CW/SSB cartridge (latest version) programme & VK3DSW modem to suit. Modern well-made, ready final adjustment. Just plug-in. \$150. VK2DJH. Ph: (043) 24 7630.

COMPUTER 640K: Battery clock, serial printer & games port. 2x360K disk drives, 130W PS, IBM compatible (very) brand new. Software incl RTTY, Morse practice, satellite tracking & decoding, etc. \$1750. Ph: (02) 663 0197(BH) or (02) 406 3338(AH)

FT-101B: & Iwari Swan 350 Iwari. Both in service. For details VK3VNH, OTHR.

FT-107-DMS: 160/10m Iwari with WARC, built-in PS, RF speed processor, 12 mems with digi mem shift, H'book & orig carton. Can demonstrate, \$800. OTHR. Ph: (02) 663 0110. Roger VK2DNN, OTHR. Ph: (02) 546 1927.

ICOM IC-701 PS-701, ICRM-3 CONTROLLER: All in EC, \$690. Macrometrics RTTY interface, software (cassette & disk) for Apple, MDK-17 modem. All cost over \$500. Sell \$100. Roger VK2DNN, OTHR. Ph: (02) 546 1927.

ICOM IC-740 TCCR: Complete with FL44 filter, LDA unit & int PS. Icom IC-730 Iwari complete with LDA unit. Both in EC and will give optimum performance. Ph: (02) 467 2354 or write P.O. Box 203, Killara, NSW 2071.

KENWOOD TR-2500: 2m H'field, complete with helical ant, 240V charger, earphone, user manual. EC, \$295. Other access add'l \$10. 2m 100W 250W psu/PB-25. PB-25 transverter \$30. BT-1 AA band cat \$10. MS-2 mobile mic cat \$30. Service manual \$10. Laure VK2AOV, OTHR. Ph: 9303 0535(BH) or 869 2160(AH).

KENWOOD TS-120W: GC with MC-10 mic, mobile bracket & manual. \$400. Please write Greg. VK2PYU. 57 Tabbett Street, West Kempsey, NSW, 2440.

KENWOOD TS-520S: Mint cond. Spare tubes, manual & org pack. \$450. John VK2WMB, OTHR. Ph: (047) 51 4257 after 6pm.

KENWOOD TS-530S: Little use, near mint. Caron, H'book, mic, 2 new spare filters & driver tubes. \$700. All 200 tuner \$120 & N'book. Denis, 2 Front Street, Orange, NSW. 2800. Ph: (063) 82 5997.

KENWOOD TS-520L: MC-50 mic. Universal antenna coupler. Model HC-500, Oskar SWR-200 power/SWR meter. All in good working order. \$450. The lot. John VK2NTR, OTHR. Ph: (02) 449 6687, evenings.

LINEAR AMPLIFIER: Model SL250DX. Covers 1.9-30MHz. Up to 200W PEPP (100W AM) in 4 steps, with 5 or 10W input. 100W 250W psu, H'book & R/F comp. Quality unit. \$250. VK2MBR, OTHR. Ph: (02) 918 2911.

POCKET COMPUTER & PRINTER: Casio PB-110 with data bank, & PC-12 mini thermal printer. Comes with 3 nth programs. Normally \$240, selling as new for \$120. Have several available. Andrew VK2EPO, OTHR. Ph: (02) 636 9310.

TOWER: 43crank-up — purchaser to remove. \$250. Bruce VK2YU, OTHR. Ph: (02) 669 1125(AH).

TRANSCEIVER: C-45. 23-30MHz FM, no crystals \$20. Creed 54 teleprinter with manual, \$30. Creed 57BPN3 tape perforator & reader with manual, \$25. BC-221 freq meter \$20. BC-135A sig gen, 100-150MHz. \$10. Regulated DC-PS 10V 2Amp. \$10. Offers considered. Brian VK2EFD, OTHR. Ph: (049) 77 2178.

YAESU FT-758: Complete with FP-75B AC & DC-758 DC power supply. FV100 VFO unit in VGC. \$250. ONU. Standard. SR-C430 UHF FM 10W Iwari. \$150. VK2CN, OTHR. Ph: (049) 49 8393.

FOR SALE — VIC

COLLINS P-391: HF rx coil box. Assembly only. VGC. \$75. Yasu FV107 VFO to suit FT-107 Iwari. EC with h'book. \$50. ONU. Siemens Mod 100 teleprinter, c/w tape punch & reader. VGC. \$85. VK3VGY. Ph: (03) 337 4902.

COMPUTER: 'Sinclair' ZX80, upgraded to 81 with 16K RAM, both books, power pack, leads, cassette recorder, AC/DC. All good working order. \$150. Tovr — 'Heathkit' HW32, 200W. 20m only. Book & HB PS. Excellent

performer. \$200. 432-436 dual range MM rx converter to 28MHz. As new. \$80. 432-436 Dual range MM rx/vert to 28MHz. All mode. 10W. As new. \$220. VK3DS, OTHR. Ph: (053) 32 2222.

FRG7, YAESU'S FINEST COMMS RX: As new, one owner. \$250. Swiss quadra. 10, & 15m. 1 owner. \$150 or \$85 each. VK3VPR, OTHR. Ph: (03) 435 5778 after 7pm.

ICOM 720A GEN COV TCVR: IC-HM7 mini. IC-AT100 auto tune. 10m. 10W. Power supply with an integrated set with manual. In carry case. 4-band switch. \$150. FC-707 toner with low pass filter. \$95. MFJ RTTY/IVC ASCII computer interface with software. \$145. Kenwood DM-81 dip meter (unused) \$95. Ron VKV3S, OTHR. Ph: (03) 567 0515.

KYOKUTO FM144-10SX: 800ch, 2m, \$140. IC-202 with 15W amp & OSCAR. \$130. IC-502, 6m, \$100. Barlow Wadley trvr. XC-30, \$110. All VGC. David VK3VLY. Ph: (03) 62 4000(AH).

VALVE TRANSCIVERS: 2 clrd Iwari using QOO640 & QOO220 cutout bottles. Offers? Gili VK3CGG, 7 Church Street, Brighton, Vic. 3141. Ph: (057) 55 1124(AH) or (057) 55 1158(BH).

VZ200/300 MODEM PACK: 300 BAUD interface with built-in software in ROM. Modem has phone & supports Bell 103/CVTCI-21 with auto-answer/auto-disconnect as standard. Complete \$370. Also software for VZ200/300 as programme copier. Will copy all mrc programmes. Only \$12. J. Halkiadakis, PO Box 31, St Leonards, NSW, 2016.

YAESU FT-101ZB: + lan, ext digi VFO, 12 mems, key pad, etc. EC, includes boxes, manuals, \$700. VK3EC, OTHR. Ph: (03) 541 2598.

YAESU FT-227RB: 2m, 10W, scanning trvr. \$250. Andy VK3DTO, Ph: (03) 483 3003(AH).

YAESU FT-890: Computer aided, full coverage trvr with mic & access. Still in box. \$1800. Also Yasu YP-1502 dummy load, still in box, \$100. Also HC-50 Universal ant couple, as new. \$100. Must sell, going overseas. Ph: (051) 99 2393 or (051) 74 1361(BH).

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INDEX

AM-COMM ELECTRONICS	3
ANDREWS COMMUNICATIONS SYSTEMS	.54 & 55
ATN ANTENNAS	57
AUSKITS	57
AUSTRALIAN ELECTRONICS MONTHLY	2
BAIL ELECTRONIC SERVICES	28
CDC SMITH ELECTRONICS	53
EASTERN COMMUNICATION CENTRE	5
ELECTRONIC BROKERS AUSTRALASIA	77
ELECTRONICS TODAY INTERNATIONAL	3 & 79
EMTRONICS	69
GFS ELECTRONIC IMPORTS	4
HIGH TECHNOLOGY COMPUTER SYSTEMS PTY LTD	6
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